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JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY

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Incorporating the International Record of Psychiatry and Neurology

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An Appraisal of Histamine Therapy in
Schizophrenia*

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Maurice Coulombe, M.D., and Marcel Bouchard, M.D.*

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The present tendency in a great number of research centers is to explore the homeostatic perturbations of the so-called functional psychoses, particularly schizophrenia. The findings tend to show that the main trouble lies in the adaptive mechanisms of the body to stress. Various theories have been brought forth to explain these defective mechanisms, most of them involving the complex hypothalamus-anterior-pituitary-adrenocortical circuit.¹⁻⁸ Furthermore, electric shock and biologic treatments, such as metrazol, insulin, and estrogens are being explained in connection with these theories, and are shown to have a depressing effect on the adrenal cortex in patients who are clinically improved.⁹⁻¹¹

From assumptions gathered from earlier work that shock therapies, electric and insulin, liberate histamine or a histamine-like substance, some workers have tried the drug as an antagonist to the adrenal cortex, and have reported improvements of as much as 24 per cent of psychotic cases, when histamine and electric shock were utilized.^{12, 23}

Other workers had previously investigated the use of histamine on different theoretic grounds. Marshall and Tarwater¹³ used it as a non-specific desensitizing agent. Hill¹⁴

* Read in part at the Regional Research Conference of the A. P. A., McGill University, Montreal, Canada, on December 4, 1953.²⁴

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suggested that histamine might produce shock with symptoms similar to those of insulin and electric convulsive therapy, and furthermore cause cerebral vasodilatation. Robb¹⁵ utilized histamine with the aim of producing vascular shock. Recently Doust¹⁶ has been insisting on the anoxemic effect of histamine on the brain.

From a clinical point of view the value of histamine therapy is also very controversial, the reported results varying from improvements^{12, 13, 17, 18} in 51 per cent of the subjects, to a low of 13 per cent, and to completely negative results.¹⁹

With these data in mind, the authors started their own investigation of histamine therapy, primarily with a theoretic interest, since this substance had been reported as an adrenocortical antagonist. At that time, they had already observed that schizophrenics showed a probable adrenocortical imbalance when insulin tolerance tests were repeatedly performed.²⁰

TABLE I
Data on the 20 Female Patients Included in the Present Study

Age	Diagnosis*	Evolution	Previous therapy† and results	Histamine max. single dose (mg.) and no. of treatments	Clinical results	Additional therapy†
28	S	3 months	ECT (nil)	4½ (30)	Nil	ECT (nil) Improved with ICT
29	H	4 months	ECT (nil)	7½ (27)	Improved	Imp. sustained with ECT and ICT
25	S	6 months	ECT (nil)	6½ (25)	Nil	ECT (nil)
32	A	8 months	ECT (nil)	5¾ (26)	Nil	Slight imp. with ECT
34	P	8 months	ECT, ICT (nil)	5½ (28)	Improved	Improved with ECT
22	H	10 months	ECT, ICT (nil)	8 (30)	Nil	ECT (nil)
24	A	1 year	ECT (nil)	6½ (28)	Nil	Slight imp. with ECT
33	S	1 year	ECT (nil)	9 (27)	Nil	ECT (nil)
21	H	1½ years	ECT (nil)	11 (29)	Improved	—
25	P	2 years	ECT (nil)	8 (30)	Nil	ECT (nil)
25	H	2½ years	ECT, ICT (nil)	8 (28)	Trans. Imp. during treat.	ECT (nil)
28	S	2½ years	ECT (nil)	11 (28)	—	ECT (nil)
22	H	2½ years	ECT, ICT (nil)	7 (30)	—	ECT (nil)
22	S	3 years	ECT (nil)	4 (30)	—	ECT (nil)
23	H	4 years	ECT, ICT (nil)	7 (30)	—	ECT (nil)
36	P	5 years	ECT (nil)	10 (26)	—	ECT (nil)
43	S	6½ years	ECT (nil)	6¾ (26)	—	ECT (nil)
28	H	8 years	ECT, ICT (nil)	10 (28)	—	ECT (nil)
31	H	8 years	ECT, ICT (nil)	11 (30)	—	ECT (nil)
31	C	9 years	ECT (nil)	11 (29)	—	ECT (nil)

* A: atypical schizophrenia; C: catatonic; H: hebephreniac; P: paranoid; S: simplex; S.R.: schizophrenic reaction.

† ECT: electroconvulsive therapy; ICT: insulin coma therapy; Met: metrazol.

APPRAISAL OF HISTAMINE THERAPY IN SCHIZOPHRENIA

At least 60 per cent of such patients revealed a definite insulin resistance, a fact that had also been observed by other investigators.^{21, 22} On a clinical standpoint, the authors were, of course, interested in the value of histamine as an auxiliary therapy.

CLINICAL MATERIAL

One hundred schizophrenics, of both sexes, with an evolution of psychosis ranging from six months to 14 years, were selected for this study. Detailed information as to sex, age, diagnosis, and other pertinent data is given in tables I, II, and III.

TABLE II
Data on 22 Improved Male Patients, With Histamine or Additional Therapy

Age	Diagnosis*	Evolution	Previous therapy† and results	Histamine max. single dose (mg.) and no. of treatments	Clinical results	Additional therapy†
24	H	3 months	ECT (nil)	8 (30)	Marked imp.	—
16	H	6 months	ECT (nil)	2 (4)	Improved	—
21	S.R.	6 months	ECT (nil)	7 (16)	Cured	ICT (same)
21	P	a few months	—	11½ (30)	Marked imp.	Testosterone propionate
14	S.R.	1 year	—	9½ (30)	Improved	—
17	H	1 year	—	10 (30)	Nil	Marked imp. with ECT and thyroid
21	S	1 year	—	7½ (30)	Trans. imp.	Imp. with ECT and thyroid
14	Schizoid	1 year	—	—	Improved	—
30	S	1 year	—	6½ (10)	Marked imp.	ICT (same)
26	H	1 year	ECT (nil)	8 (30)	Improved	—
20	H	1 year	—	7 (22)	Improved	—
20	H	1 year	ICT (nil)	4½ (24)	Improved	—
21	H (post- cortisone)	1 year	ECT, ICT (nil)	3 (30)	Nil	ECT (nil), ICT (marked imp.)
25	P	1 year	ECT (nil)	12 (30)	Marked imp.	—
22	H	1½ year	ECT (nil)	10 (30)	Improved	—
27	P	4 years	ICT, ECT (nil)	10 (30)	Improved	—
32	P	4 years	ECT (nil)	8½ (30)	Marked imp.	—
23	Acute S.R.	4 years	ECT, ICT (imp.)	10¾ (30)	Cured	—
22	H	6 years	ICT (nil)	10 (31)	Improved	—
35	P	6 years	ECT, ICT, Lob. (nil)	10 (31)	Improved	—
25	H	6 years	ECT, ICT (nil)	15 (30)	Improved	—
23	S	a few years	ECT, ICT (nil)	7½ (30)	Fair imp.	ECT (same)

* and †: See table I.

TABLE III
Data on 58 Unimproved Male Patients, With Histamine or Additional Therapy

Age	Diagnosis*	Evolution	Previous therapy† and results	Histamine max. single dose (mg.) and no. of treatments	Clinical results	Additional therapy†
21	H	1 year	ECT (nil)	5½ (11)	Nil	ECT (nil)
28	H	1 year	ECT (nil)	10 (24)	Nil	ECT, ICT (nil)
20	H (?)	1 year	ECT (nil)	5 (29)	Nil	ECT (nil)
15	H	1½ years	—	5¾ (30)	Marked, but trans. imp.	—
20	H	2 years	ECT (nil)	7½ (15)	Nil	ECT (nil)
24	P	2 years	—	5½ (9)	Nil	ECT, ICT (nil)
26	H	2 years	—	7½ (30)	Nil	ECT, ICT (nil)
26	H	2 years	ECT, ICT (nil)	10½ (30)	Nil	ECT (nil)
20	H	2 years	—	10½ (30)	Nil	ECT, ICT (nil)
23	H	2 years	ECT (nil)	5 (9)	Nil	ECT (nil)
20	H	2 years	—	9½ (30)	Nil	ECT, ICT (nil)
29	P	2 years	—	9½ (30)	Nil	ECT, ICT (nil)
20	H	2 years	ECT (nil)	7½ (16)	Nil	ECT (nil)
20	H	2 years	ECT (nil)	7½ (27)	Nil	ECT (slight imp.), ICT (nil)
20	H	2 years	ECT (nil)	7 (30)	Nil	ECT (nil)
20	P	2 years	ECT (nil)	6½ (25)	Nil	ECT (slight imp.), ICT (nil)
22	H	2 years	—	5¾ (30)	Nil	ECT (nil)
25	P	2 years	—	10½ (30)	Nil	ECT (nil)
36	P	3 years	ECT (nil)	14 (30)	Nil	ECT (nil)
26	A	3 years	ECT (nil)	11½ (30)	Nil	ECT (nil)
24	P	3 years	ECT, ICT (nil)	7 (30)	Nil	ECT (nil)
22	P	3 years	ECT (nil)	12 (30)	Trans. imp.	ECT (nil)
19	H	3 years	ECT (nil)	14 (30)	Nil	ECT (nil)
25	H	3 years	—	8 (29)	Nil	ECT (nil)
27	H	3 years	—	10 (28)	Nil	ECT (nil)
19	H	3 years	—	9 (30)	Nil	ECT (nil)
26	H	3 years	ECT (nil)	9½ (31)	Nil	ECT (nil)
26	H	4 years	—	9½ (30)	Nil	ECT, ICT (nil)
21	P	4 years	ECT, ICT (nil)	14 (30)	Nil	ECT (nil), Lob. (marked imp.)
30	H	4 years	Lobotomy (nil)	6½ (19)	Nil	ECT (nil)
24	H	4 years	ECT, ICT (nil)	10 (30)	Nil	ECT (nil)
30	P	4 years	ECT (nil)	10 (30)	Nil	ECT (nil)
24	P	4 years	ECT (nil)	12 (30)	Nil	ECT (nil)
24	C	4 years	Met., ECT (nil)	10 (30)	Trans. imp. during in-jec-tions	Received thyroid (nil)
24	H	5 years	ECT, ICT (nil)	12 (30)	Nil	ECT (nil)

APPRaisal OF HISTAMINE THERAPY IN SCHIZOPHRENIA

TABLE III (Continued)
Data on 58 Unimproved Male Patients, With Histamine or Additional Therapy

Age	Diagnosis*	Evolution	Previous therapy† and results	Histamine max. single dose (mg.) and no. of treatments	Clinical results	Additional therapy†
17	H	5 years	ECT, ICT (nil)	15 (30)	Nil	ECT (nil)
24	H.-C.	5 years	—	7 (12)	Nil	ECT (nil)
28	P	5 years	ECT, ICT (nil)	12 (30)	Nil	ECT (nil)
25	H	5 years	ECT, ICT (nil)	12 (31)	Nil	ECT (nil)
26	P	5 years	—	7 (8)	Nil	ECT (nil)
30	H	6 years	ECT (nil)	12 (31)	Nil	ECT (nil)
26	P	6 years	ECT, ICT (nil)	10 (31)	Nil	ECT (nil)
26	H	6 years	ECT (nil)	10 (30)	Nil	ECT (nil)
20	H	6 years	ECT, ICT (nil)	11 (30)	Nil	ECT (nil)
30	H	6 years	ECT (nil)	10 (30)	Nil	ECT (nil)
30	H	6 years	ECT, ICT (nil)	14 (30)	Nil	ECT (nil)
22	H	6 years	ECT, ICT (nil)	16 (30)	Nil	ECT (slight imp.)
35	P	6 years	ECT (nil)	12 (30)	Nil	ECT (nil)
22	P	7 years	ECT, ICT (nil)	10 (30)	Nil	ECT (nil)
30	H	7 years	Lobotomy	6½ (30)	Nil	ECT (nil)
23	S	8 years	ECT, 2 series (nil)	11 (30)	Nil	ECT (nil)
24	H	8 years	ECT, ICT (nil)	3 (30)	Nil	ECT (nil)
30	H	9 years	ECT, ICT (nil)	15 (30)	Nil	ECT (nil)
35	H	9 years	ECT, ICT (nil)	14½ (30)	Nil	ECT (nil)
32	H	10 years	ECT, ICT (nil)	16 (30)	Nil	ECT (nil)
37	H	10 years	ECT (nil)	15 (30)	Nil	ECT (nil)
48	H	12 years	ECT (nil)	10 (30)	Nil	ECT (nil)
45	H	14 years	ECT (nil)	20 (30)	Nil	ECT (nil)

* and †: See table I.

PROCEDURE

The technic used was that suggested by Sackler et al,²³ consisting of the subcutaneous injection of an initial dose of 0.25 to 0.50 mg. of histamine base (approximately 0.75 to 1.50 mg. of histamine phosphate), with a daily increase of 0.25 to 0.50 mg. until the appearance of definite symptoms of intolerance. Treatment was pursued for 30 days. The mean dosage for the group was 9.3 mg. of histamine base, the same dose being repeated after 45 minutes. Some patients were able to tolerate amounts as high as a double 20 mg. dose. There was some evidence that this tolerance might be directly proportional with the duration of psychosis (figure 1). On the contrary, a few psychoneurotics submitted to the same therapy were hypersensitive to histamine, toxic reactions occurring with doses of 3 mg. of base.

Aside from the usual cardio-vascular reactions accompanying histamine injection, general psychic manifestations such as excitement and loquacity were noticed in some patients.

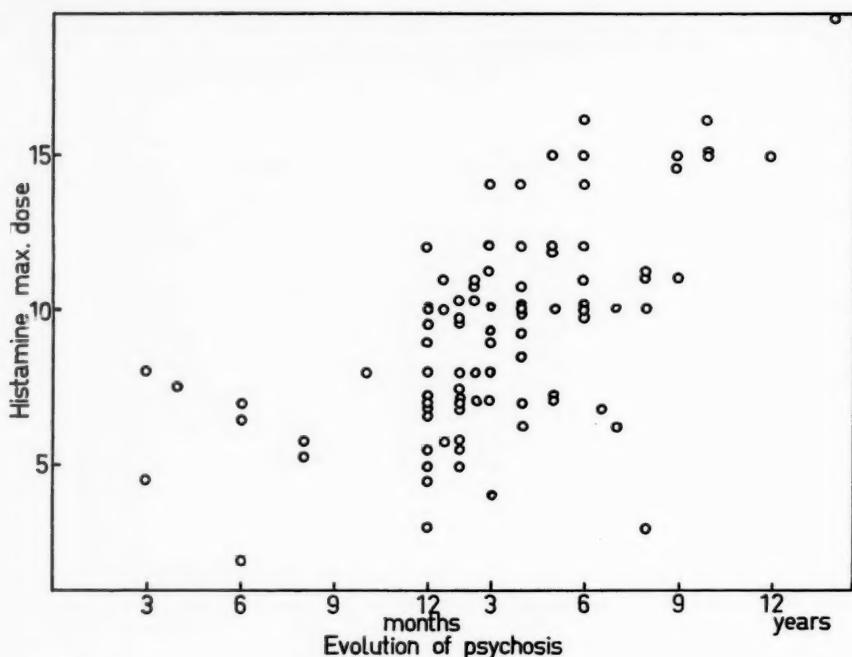


FIGURE 1

CLINICAL RESULTS

In the present survey, patients were considered as improved if they were able to leave the hospital and be socially readjusted when their previous behavior had necessitated hospitalization.

Of the 100 patients, only 20 would be improved according to the above definition. The mean features of improvement were a better psychomotor and pragmatic activity, and decreased instability and anxiety. Five patients hallucinating at the onset of their psychoses lost this projective symptom during therapy. Sometimes the relatives were the first to notice the change in behavior and sociability. Obviously, the improved patients still remain latent schizophrenics, at least schizoid personalities, and would be diagnosed as such. However, the acute psychotic manifestations which had made their commitment compulsory had vanished.* It was noteworthy that 14 of the 20 improved patients had an evolution of psychosis ranging from three to 18 months (tables I and II).

* One patient of this group, with hypogenitalism, was given testosterone propionate (25 mg. three times a week) during the course of histamine therapy.

APPRAISAL OF HISTAMINE THERAPY IN SCHIZOPHRENIA

The 80 remaining subjects are still hospitalized. Though some transient changes occurred during the course of treatment, all, except for the 6 cases described below, returned to their previous mental state. In 75 of these patients, evolution of psychosis was more than two years, and in 29, more than five years (tables I and III).

In 76 cases, histamine was followed by electric convulsive therapy alone (20 shocks). There was only one important improvement; 5 were slightly improved, but are still hospitalized. Four patients received thyroid extract along with electric convulsive therapy; of these, 3 were improved, 1 quite markedly. Following completion of the treatment, insulin (45 comas) was administered to 11 patients. Here again, only 2 cases were improved. Six months previously, one of these patients had been refractory to insulin and electric convulsive therapy and was considered a chronic case. In the course of histamine therapy, he became completely well for two whole days, but unfortunately regressed to his previous state. The administration of electric convulsive treatment subsequent to a course of histamine had no effect, though when this was followed by insulin, this particular patient improved. It is noteworthy that this patient had developed a schizophrenic syndrome after a one year cortisone cure for asthma.

SUMMARY AND CONCLUSIONS

Histamine therapy has been administered to 100 schizophrenic patients, 20 female, 80 male, of ages 14 to 48 years, with an evolution of psychosis ranging from three months to 14 years. Fifty-seven of these patients had been successfully treated previously with either or both electric convulsive therapy and insulin coma therapy, and 2 had had lobotomy.

(1) Improvement, sufficient to permit discharge from the hospital, was attained by 20 of 100 patients following a course of histamine therapy (after the Sackler technic) over a period of 30 days. (2) Of the 80 unimproved patients following histamine, 76 were given a course of electric convulsive therapy alone (20 shocks) with one important improvement. (3) Of 4 patients that received thyroid extract with electric convulsive therapy, 3 were improved. (4) Following the electric convulsive therapy, insulin coma therapy was administered to 11 patients with resulting improvement in only 2 cases.

The high tolerance of the group to histamine appeared to be a further argument in favor of a homeostatic dysequilibrium in schizophrenia. There was some evidence that this tolerance might increase with the evolution of psychosis.

Histamine in this study served to attain practically the same degree of improvement that could have been expected by the utilization of one of the accepted therapies, namely electric convulsive therapy. For after improvement was attained in 20 per cent of the patients under study by histamine alone, the subsequent utilization of electric shock brought improvement in only 3 more patients.

Further experiments will be needed to explore the additive effect of histamine, thyroid, electric shock, and insulin treatments, as well as to find a satisfactory explanation for the high tolerance to histamine observed in psychotic patients.

RESUMEN

Los autores estudiaron el efecto de un tratamiento a base de histamina durante un mes (técnica de Sackler) en cien esquizofrénicos (80 del sexo masculino) cuya evolución variaba entre tres meses y 14 años. Veinte pacientes mejoraron suficientemente, lo que les permitió descansar temporalmente después del tratamiento. Ochenta pacientes no mejoraron. De ellos, 76 reciben 20 series de electrochoque; se advierte una sola mejoría importante. Cuatro de estos pacientes reciben extracto de tiroides, en el curso del último tratamiento; en tres de ellos se pudo observar un beneficio apreciable.

En 11 sujetos se intentó la serie de electroplesia e insulinoterapia (45 comas), como resultado diez mejorías. Parece pues, que la tolerancia marcada de un grupo frente a la histamina, es un argumento más en favor del desequilibrio homeostático que se observa en los esquizofrénicos. Los autores han podido observar que esta tolerancia parece estar de acuerdo con la duración de la enfermedad.

En el curso de esta investigación con histamina, se observa que se obtiene prácticamente los mismos resultados que con las terapéuticas corrientes, tales: insulina o electrochoque. En efecto, el ensayo de este tratamiento siguiendo a la cura de la histamina, no aporta más que tres nuevos agregados a los veinte ya mejorados, por la histamina. Investigaciones más profundas serán necesarias para apreciar el efecto complementario de la histamina sobre la insulinoterapia o la electroplesia, solas, y explicar de manera satisfactoria esta elevada tolerancia frente a la histamina.

RÉSUMÉ

Les auteurs ont étudié l'effet d'une cure d'histaminothérapie d'un mois (technique de Sackler) sur cent schizophrènes (80 de sexe masculin) dont l'évolution variait entre trois mois et 14 ans. Vingt patients furent suffisamment améliorés pour permettre leur mise en congé à la suite de ce traitement. Des 80 patients non améliorés, 76 reçurent vingt séances d'électrochoc; on nota une seule amélioration importante. Quatre de ces patients reçurent de l'extrait thyroïdien au cours de ce dernier traitement; trois d'entre eux purent en tirer un bénéfice appréciable. Enfin, à la suite de l'électroplexie, l'insulinothérapie (45 comas) fut tentée sur 11 sujets, avec comme résultat deux améliorations seulement.

Il semble bien que la tolérance remarquable du groupe vis-à-vis de l'histamine soit un argument de plus en faveur du déséquilibre de l'homéostase que l'on a observé chez les schizophrènes. Les auteurs ont pu noter en outre que cette tolérance semble s'accroître avec la durée de la maladie.

Au cours de cette investigation, l'histamine permit d'obtenir pratiquement le même résultat auquel on eut pu s'attendre avec les thérapeutiques courantes, telles l'insuline ou l'électrochoc. En effet, l'essai de ce traitement à la suite de la cure d'histamine, n'apporta que trois nouvelles additions aux vingt cas déjà améliorés par l'histamine.

Des recherches plus approfondies seront nécessaires pour apprécier l'effet complémentaire de l'histamine sur l'insulinothérapie ou l'électroplessie seules, et expliquer de façon satisfaisante cette tolérance élevée vis-à-vis de l'histamine.

APPRAISAL OF HISTAMINE THERAPY IN SCHIZOPHRENIA

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Psychotherapy of Psychoses: An Attempt at a Working Formulation of Some of the Clinical Psychopathological Factors Observed in Schizophrenic Patients*

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In an attempt to develop and maintain a program of psychotherapy of psychoses, one area of problems to be solved concerns the need for an operational formulation of the clinical psychopathologic phenomena observed in schizophrenic patients. It has led to further discussion and a study of the formula^{12a} for psychosis discussed by Fenichel, following Freud,^{27a} viz., that the two main steps involved in the clinical picture are the break with reality and attempts to regain the lost reality. Restated for a working formulation, the two main steps in a schizophrenic psychosis are the denial of the existence of demands made by objects which are perceived by the patient as murderous, and the return of emotional relationships with objects, in distorted form, which are largely the consequence of the specialized modes of adaptation of the infantile ego.²⁹ The discussion is presented with this point in mind.

Data for this paper are based on observations† of schizophrenic patients in individual and group psychotherapy and in biographic case study. An effort has been made to appreciate the manifest dysfunction of the patient in terms of dysfunctions of integrated personal functioning‡ and an attempt made to understand the factors involved therein. In this

* From the Boston Psychopathic Hospital.

† Some of the study and formulation has been accomplished in group therapy seminars conducted for the Boston State Hospital staff and the Cushing Veterans Hospital Psychiatric closed-ward staff. For this help I am grateful. Background, case material, and examples are taken from cases of Drs. J. Mann, D. Menzer, C. Standish, M. Finlayson (former Boston State Hospital associates), and my own.

‡ Freud¹⁸⁻²⁸ showed how the biologic concept of adaptation was valid for all abnormal mental conditions by demonstrating the existence of unconscious mental life, and its effects on thought, symptoms, and behavior (in neuroses); translated the biologic principle of adaptation into the biopsychologic "pleasure-principle;" demonstrated infantile sexuality, the role of past and immediate traumas in producing conflicts, the universal bisexual nature of man, the role of homosexual desires, the role of unrecognized guilt, the significance of primitive types of aggression in adult adjustments, showed in his study of dreams and their relationship to the experiences of the waking personality, what has been shown to apply also to the previously incomprehensible content of psychotic thought controlled by prelogical types of thinking, showed pleasure needs are of infantile preobject type, emphasized the theory that delusions, hallucinations, and special use of words repeat the infant's rudimentary efforts to establish an interest in external things, warned against confusion of symptoms with primary incapacity to deal effectively with the environment, said in his opinion psychosis is the consequence of abnormality of the ego.

Jung³⁸ worked out in detail the application of investigation of dreams to schizophrenic thought. Made a critical presentation of theoretic views on the psychology of dementia praecox prior to 1906.

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instance, the clinical psychopathologic factors are the qualities of the person which cannot be resolved into simpler physiologic elements and which in conjunction with the specific life situation determine the special portion of the life history of the individual called the schizophrenic psychosis.*

Clinical psychopathologic observations center about the following points: 1. The intense ambivalent attitudes toward objects of which the patient seems quite aware. 2. The "re-taliation" anxiety which the patient experiences some time during the course of his illness. 3. The persistence of and exaggeration of specialized ego mechanisms. 4. The "impasse" in an interpersonal relationship which results by virtue of the highly specialized infantile ego meeting a reality situation which requires more mature adaptations. 5. The decompensation of the specialized ego functions. 6. The study of factors which maintain the ego in a decompensated state.

THE INTENSE AMBIVALENCE

Bleuler⁷ pointed out the co-existence of contrary feelings toward the same person and the patient's awareness of these contrary feelings. Hendrick²⁸ observed that the aggressive impulses are more purely hostile and that the unconscious love of the hated object is less than in neuroses. A clinical example such as the following is familiar to all of us.

A 25 year old single female tells of her feelings for men she desires and cares for. She creates situations which in a small way satisfy her hostile feelings toward them. She is prepared for the end result by feeling they do not really care for her, "when he gets to know me, he will see I am no good." She terminates the relationship before he does. At one stage of her therapy her associations about being bad had to do with her desire to bite her boy friend's penis. When walking with him, words would "slip out" of her mouth as "watch out you will trip over your penis." She related in great detail her boy friend's feelings of being repulsed when she put out a cigarette in a small catsup cup during a meal they were both supposedly enjoying.

The development of the ambivalent attitude seems to appear in both those deprived of or rejected by their love objects, and those overprotected and overindulged by their love objects. Whitehorn⁵⁸ points out that the deprived, emotionally insecure patients find themselves regularly inhibited in self-expression because of paralyzing uncertainty as to the affection and respect in which they are held and burst out spasmodically in awkward and ungracious self-assertion. The overprotected and overindulged may acquire offensive habits of self-assertion through loss of an appropriate milieu for the development of their

* A group of disorders characterized by^{12a} strangeness and bizarre nature of symptoms, absurdity, and unpredictability of the affects and intellectual ideas, and the poor connection between the two. Freud²⁷ grouped disorder around "regression." Kraepelin^{38a} saw the unifying clinical principle in an assumed uniformity of outcome in a characteristic deterioration with lack of emotional responsiveness. Candidates seem drawn from the biologically handicapped.⁵⁸ Bleuler⁷ stressed the rupture or loosening of associations, presumably by reason of neurohistologic lesions, although this was later attributed by him to schizoid temperament. Hendrick^{28a} stresses the "retreat" from object love to narcissism betrayed in the schizophrenic when sitting apart, doing, thinking, and feeling nothing in which others might share with emotional spontaneity, and shows how little outside of himself has the slightest subjective value. Meyer,^{40, 41} Jeliffe,^{30, 31} Campbell,¹⁰ and Brill⁹ tend to clarify the concept.

responsiveness to the feelings of others. Conflict may also come from the frustration of the child's natural propensities. The capacity for useful self-assertion is absent or impaired. The failure in any given event to attain satisfying interpersonal relationships* produces anxiety, retaliative in nature, with which the patient must deal. The ambivalent attitude is present almost from the beginning† and the effects become evident at all future levels of development. Hendrick^{28a} believes these are forms of hatred and destructiveness which are not coincidentally regressive expressions of sexuality, but manifestations of an extroverted death impulse with which a minimum of sexual fusion has occurred. It appears that in this way the major problem of the schizophrenic patient is his fundamental failure to deal with obvious problems of self-preservation stemming from his lack of adequate and consistent affect-reward motivations.‡

THE RETALIATION ANXIETY

The fear of detection, rather than the guilt of later childhood and maturity, is most conspicuous. The anxiety is not well rationalized (except by delusions). The anxiety is more often a reaction according to the Talion principle,§ of the diadic or two-person pattern, with the expectation that the object of an aggression will automatically retaliate in kind. Clinically, it appears to grow out of the conflict to hide rather than express murderous wishes and impulses in response to disturbed interpersonal relationships with objects upon whom they are dependent. The anxiety if so excessive or prolonged as to prevent integrative effort with consequent lack of uniformity in the expressions of a personality about a definite

* Kempf³⁷ states, "The individual's need for the esteem, the love and respect of other 'particular' individuals is a universal attribute of normal, gregarious man. He is not only so constituted by nature, but the whole structure of civilization depends upon the social group being able to continuously influence (condition) each individual to wish to maintain it. The wish to contribute to civilization and sustain it is decidedly dependent upon the nature of the individual's sexual cravings, and his need of a love object, the acquisition of which forces him to make himself admirable and worthy, and to live for mutually attractive ideals."

† Fromm-Reichmann¹⁵ says "ambivalence" rises as a general feature of human emotional life most decidedly developed in early childhood and later on decreasing but never disappearing. If the tension between love and hatred becomes intense, hostility will be repressed. If repression is not successful the patient may escape from a reality in which he is constantly submitted to the conflict between his hostility, his blaming conscience, and the fear of retaliation, into the unreality of sickness.

‡ Sullivan⁶² and Fromm-Reichmann¹⁶ stress interpersonal relationships, i.e., everything a schizophrenic does is a distorted expression of a positive or negative relationship to his surroundings and to the therapist.

§ Hendrick²⁸ makes the same observations in his review of the contributions of psychoanalysis to the study of psychosis up to 1939. He points out "fear of detection" by others is conspicuous in social relations of psychotics.

Schmedelberg⁴⁶ and Klein³⁸ showed the relationship of very primitive fantasies of aggression to anxiety and projection.

Jelliffe³¹ in speaking of catatonia and the censorship of the vigilance, conceives the hypervigilance as containing a supreme effort to repress the hated and feared thing from coming into thought and action. This hypervigilance is necessary both in its positive (murder) and its negative (suicide) form.

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affect seems to be the primary psychopathology.* So far as the patient's defenses alleviate his anxiety to that extent he becomes unaware of it. A clinical example illustrates the point of retaliation anxiety as follows:

At onset of illness the patient was absolutely certain her mother and father were going to kill her. Therapy disclosed that she felt the mother gave her no affection and that she was forced to yield to the father's domination. She felt she was bad in that by violently biting she would like to get what she wanted or did not get in childhood; any overt attempt on her part would meet with retaliation. Severe temper tantrums in childhood were terminated by the parent dashing cold water in her face. Feeding presented a major problem in infancy with anorexia, vomiting, and diarrhea. Now she eats voraciously if she misses an appointment. A few days before an appointment she eats very little with poor appetite. Abandonment, really being rid of, or sent away by the therapist, is one of her fears.

SPECIALIZED EGO MECHANISMS

The persistence and exaggeration of specialized ego mechanisms to the exclusion of those more consistent with mature adaptation seem to be the case in schizophrenia; this is considered the secondary psychopathology. These ego mechanisms consist of devices for allaying the retaliation anxiety which tends to protect the patient's self-esteem in a second-rate way and provide a sort of automatic avenue to self-consolation. These devices tend to be repeated because they dull the psychic pain of failure or insecurity with other substitutive gratifications, but fall short of being completely gratifying with complications of shame, disgust, resentment, dependence, and rebellion. These devices become organized into habitual ways of resolving interpersonal issues with a minimum of distress. Commonly observed devices classified as to type of "hurt" or anxiety they relieve are as follows:[†]

* Jung³⁴ said the primary condition, the extreme abaissement, causes the psychic totality to fall asunder and into complexes; the ego-complex ceases to play the important role among these. He agrees that Janet's concept of abaissement explains a psychic condition in which a train of thought is not carried through to its logical end, or where it is interrupted by strange contents insufficiently inhibited. He holds Bleuler's views on primary symptoms can be formulated on Janet's notion of abaissement and seriously considers the possibility of a so-called "*développement arrêté*," where a more than normal amount of primitive psychology remains intact and does not become adapted to modern conditions. He is not convinced "merely" psychic events can cause an abaissement.

Karpman,³⁵ discussing hebephreniac fancies, believes that the delusional elaborations are often nothing more than the creating of barriers against committing the two basic crimes of mankind—incest and parricide.

Standish, Mann, and Menzer^{36a} attempt to trace the development of anxiety in schizophrenic patients and to indicate some of the implications for treatment and the difficulties of countertransference.

† Whitehorn³⁸ talks of personality trends, i.e., the habitual ways by which a person has come to resolve interpersonal issues resulting from his personal conflicts with others over matters of affection, respect of others, frustration of natural propensities, etc., the "don't mind" trend, the "paranoid" trend, tendency to day-dreaming, delusion^{al}, and hallucinatory preoccupations, etc.

Hendrick³⁸ says adjustments depend on the more primitive types of defense, i.e., those which normally predominate before a high degree of personality organization is attained, viz., inhibition of impulse, projection, and flight.

1. Defense against the anxiety over lack of affection,* the "not caring," "don't mind" trend of Whitehorn⁵⁸ which he expresses in the words "nobody cares for me; well, I don't mind; I don't care for anybody else." In early life this may manifest itself in lack of interest, or in loss of previous contacts with playmates, school, hobbies, sports or the socializing activities of childhood; in adolescence, there is exclusive preoccupation with one narrow field which prejudices a well-rounded development of the social personality. The patient already referred to above, when confronted by childhood anxieties, would act as if she were getting along very well, i.e., behaved as though it were not so.

2. Defense against guilt anxiety apropos to "baser" inclinations and propensities of the patient designated the paranoid trend by Whitehorn,⁵⁸ i.e., the tendency to attribute hostile or aggressive motives to others. A great need for affection exists in these persons with such readiness to feel slighted. Solution of guilt anxiety complicated by an inclination, though quite unconscious, to solicit much desired affection and sympathy through illness (Whitehorn,⁵⁸ hypochondriacal trend) may supply the patient with ideas of being poisoned or hurt in body by the persecutor. The solution of guilt anxiety apropos to resentful and aggressive impulses against persons upon whom one is dependent handled by perfectionistic technic (Whitehorn,⁵⁸ obsessive trend) when combined with the paranoid trend may incline the patient to suspect his persecutors of accusing him of wrongdoing. The combination of the aloof individual with a tendency to shut himself in or withdraw from what for him is a somewhat painful experience of free and easy sociability, and with his tendency to depersonalize his impulse life, makes for a serious illness. Often the tendency to self-magnification may add a grandiose quality to delusional expression.

3. Defense against the anxiety associated with unsatisfactory relations in life, i.e., finding consolation for unsatisfactory relationships in real life by daydreaming or self-flattering delusions.† The patient reconstitutes the universe in accordance with repressed unconscious wishes and unattainable fantasies. These occur when the sense of responsibility is slight or the incentive to conformity is weakened. The defense may not be readily accepted, with resultant internal conflict and debate, with hallucinatory representations of the issues in-

* Whitehorn⁵⁷ states that through clinical experience we frequently recognize recurring personal issues about which the schizophrenic patient is regularly and indecisively preoccupied, viz., affection, i.e., when simple personal affection is brought into question, when one is preoccupied over the lack of the most elementary basis of acceptance by others and feels fundamentally rejected, then the most elementary incentive to social conformity is dissolving. The lack of this basic incentive to social living leaves the personality structure prone to dilapidation.

† Starcke,⁴⁹ van Ophuijsen,⁵⁴ and Feigenbaum^{13, 14} showed a relationship of paranoid symptoms to infantile fantasies which personalize feces and consider them animistically as dangerous beings which threaten the individual. Abraham⁸ showed this was related to a stage of development at which the emotions are centered on a body part of the object rather than on the person in his totality. Freud^{18, 21} showed projection in "paranoid" phenomena, i.e., when one's own idea or fantasy is ascribed to someone else. Angyal^{1, 2} finds that certain somatic delusions are based on muscular sensations due to loss of ego reference of muscular activity and believes there is a general disturbance of body self in schizophrenia. Bellak⁵ gives a careful review of psychologic studies in schizophrenia. Ernst¹² believes homosexuality is always the basis of paraphrenia and can be seen as such in delusions and hallucinations. Karpman³⁶ see footnote no. 1, page 13.

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volved, and may be prolonged and relatively unpleasant.* Not every hallucinatory experience is by any means a direct wish fulfillment; many are insulting and antagonistic, representing "the other side" of a personal issue.

4. Defenses associated with internal struggles of personality as seen in various cases will not be discussed in detail here beyond mention since they belong more properly to the neurotic elements in the schizophrenic personality. Mechanisms observed are: 1. Substitutive types of goodness apropos to resentful and aggressive impulses against persons upon whom one is dependent for security (Whitehorn,⁵⁸ obsessive trend). Clinically, one observes these patients frequently to be appeasers. 2. Solicitation of sympathy and desired affection through illness (hypochondriacal trend⁵⁸). 3. Tendency to magnify difficulties which would excuse failure (neurastheniac trend⁵⁸). 4. Escape by narcosis. 5. Solution of conflicts by the extraordinary dodge of losing a function (dissociative trend⁵⁸). 6. Solution of conflict by utilization of an organ or system of organs as outlets for a particular personality conflict (psychosomatic conditions⁵⁸). 7. Combinations of above including the obsessive trend, neurastheniac trend, and hypochondriacal trend in cases of "constitutional inadequacy."⁵⁸ In general, the defense mechanisms are specialized in the more simple and primitive, and hence impair rather than facilitate real and useful interactions with the environment. They appear to be those which normally predominate before a high degree of personality organization is attained. It is not the purpose here to argue the problem of "repression" but it seems indisputable that some distortion of conscious content and concealment of real content is to be observed. The elements of the adoption and organization of these patterns seem originally perceived as details of other people's behavior, i.e., "identifications,"⁵⁸ and play a conspicuous role in their development although the data allow no more detailed comment.

EGO DECOMPENSATION

In the schizophrenic illnesses an exaggeration or abnormal persistence of the above patterns of defense in conjunction with the specific life situation determines the psychotic picture.† Through these persistent and repetitive patterns of maladjustment in interpersonal relationships one develops an impasse (Whitehorn,^{58, 57} intolerant situation) from which one then recoils or makes a strategic retreat into the schizophrenic reaction. The patient's illness represents in a large part the development of an automatic defense mech-

* Masserman's^{59a} case shows that hallucinations are often projected pictorializations of narcissistic aggressive or erotic conflicts. Since none of the conflicting wishes involved can be completely fulfilled, hallucinations may contain a large element of frustration and anxiety, although they then also represent attempts at the mastery of the unconscious conflict.

† Storch⁶⁰ showed that delusions, hallucinations, and motor speech, like dreams, are prelogical forms of thinking. Tausk⁵³ showed how a schizophrenic patient's delusion that he was magically influenced by a machine was derived from his genital sensations. Walder⁶⁵ says in psychosis the function of successful adaptation to environment is absent. Nunberg⁴² comments on the failure of the "synthetic function" in psychosis.

ism out of devices of defense* by which he gains consolation at the price of moderate distress or disability and saves himself from intolerable anxiety and tension. The elements of the retreat† may show evidence of a lack of personality maturity either by reversion or a lack of emotional development beyond the emotional development of infants, adopting an attitude of expecting infinite service and tolerance from others. The "retreat" may appear in children by an attitude of childish irresponsibility and dependence, in adolescents by an attitude expressed in gang spirit, hero worship, and "crushes," a line of wisecracks, and other excuses in adventurous and exhibitionistic activities, in the manner they relate themselves to or carry on their interpersonal relationships. Hendrick prefers to state it otherwise, i.e., that the person has not achieved adequate organization of early behavior patterns of normal executant functions, repression, etc., through identification‡ and therefore cannot defend himself adequately against the anxiety incident to unusual emotional stress. He considers the patient's failure to deal with reality as a consequence of his defective ego and not its cause. The extraordinary persistence in maintaining these emotionally distorted misconstructions and faulty evaluations of the situation are characteristic of the reaction. Unable to abide even the usual approximations by social agreement as to time, space and causality, the patient reorganizes his world into startlingly different categories of his own. More active schizophrenic symptomatology represents active anti-schizophrenic struggling of the patient's own more active normal impulses and feelings of obligation.§

IMPASSE IN INTERPERSONAL RELATIONSHIPS

The "impasse" factors relate to the tensions and anxieties arising from the specialized ego's infantile modes of handling the problems of interpersonal relationships, usually occa-

* Jung³³ says resistance caused by the complex is the fundamental fact of schizophrenic dissociation. The painfulness of the elaborated complex necessitates a censorship of its expression. Resistance always springs from a peculiar sexual development.

† Retreat as used here means, I think, the same as "regression to narcissism," "lost his objects," "parted with reality," or "ego breakdown,"^{12a} i.e., symptoms are a direct expression of a regressive breakdown of the ego, an undoing of differentiations acquired through mental development and/or attempts at restitution. White⁵⁶ thought of regression as a dropping back to the use of a simpler type of machine for handling reality; this simpler set of mechanisms with which to deal with reality he called functional decerebration.

‡ Hendrick's^{28, 28a, 28b} identifications are reactions to emotional relations with other people and play a conspicuous role in development, i.e., in the development of the ego, the adoption and organization of patterns whose elements were originally perceived as details of other people's behavior play a very important role. Facts of preternatural capacity to understand infantile desires and to gratify them without painful subjective reactions seem evidence of a defective organization of those identifications responsible for the experience of guilt.

§ Clinically, apropos to the more active schizophrenic, symptomatology as seen in acute catatonic reactions, on careful scrutiny may seem to be without special adaptive significance,¹⁰ a nonadaptive disturbance of function, as if the patient said in word and act, "I am busy reconsidering as I do not know what to do. I am taking time out and bringing before my love objects issues for consideration." Thus, adaptive significance may be evident. "Symptoms" are often^{57, 58} tentative attempts to reach a psychotic adjustment in life through accepting passive dependence, not usually in a frank outspoken way, but by way of delusional distortions and dispragements which may give an air of independence to the ultimate dependence.

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sioned by some frustration of object need, i.e., he must hate what he loves. The libido tension remains and can be satisfied only by a return to the infantile mode of expression. At periods of quantitative increase in instinctual tensions,* or under circumstances which stimulate repressed infantile sexuality or increase infantile anxieties or guilt feelings, the defensive methods of the specialized ego become insufficient. In general one may say the impasse results from the *nonsuccess*† of one's undertakings. Only through successful self-expression in a manner which maintains emotional security and self-assurance through the affection and response of others does one feel successful in one's undertakings.

MAINTENANCE OF DECOMPENSATED STATE

It appears that the maintenance of a psychosis in addition to the factors mentioned above in its development has to do with the patient's constant efforts to escape his intolerable anxiety through action even if to the observer such action may seem relatively futile. Though such action is troublesome and hindering it has considerable value in maintaining a semblance of stability. During various stages of the patient's development of suspicious isolation and remoteness, his objects, through their own unconsciously defensive reactions, serve to accelerate and maintain his "withdrawal." There remains much to be learned concerning the "chronicity factors" (or factor they play in maintenance of a decompensated state),‡ of the psychonoxious "particular people" in a patient's life, rela-

* The pregenitally colored Oedipus complex and readiness to give up new achievements, remain relatively normal during the latency period but cannot cope with the somatically increased instinctual excitement brought on by puberty.^{12a}

† The break with reality serves the purpose of combating the instinctual drives directed to objects; reality is repudiated less because of its frustrating effects than because it holds temptations.^{13a} Hutchings et al.²⁹ state the precipitating cause is the agent which brings to the surface the previously submerged cravings; the psychosis is the attempt of the individual to solve the conflict between these cravings and the standards of adult life. Strecker⁵¹ says the test of a "situation" psychosis is the appearance of certain phenomena which, necessarily in an unreal and fantastic fashion, correct the hard and uncompromising facts of reality.

‡ Eissler¹¹ assumes the majority of those patients classified as schizophrenics at present could be cured by means of psychotherapy without gross interference with their physical condition if an adequate psychic field could be established. By this term is meant a configuration of stimuli to which a personality structure reacts in such a way as to satisfy a desire, to perform an integrative act, or to decrease pent-up tension. The adequate psychic field is bound to be a specific constellation in another human being.

Hendrick^{28a} states that in the course of development the child's need of external objects becomes a major goal. It leads to everything about the human organism which is social, but is never without a residue of narcissism in the normal adult. An abnormal degree of adult narcissism is usually occasioned by some frustration of object need.

Bettleheim, Sylvester,⁶ and Rank⁴⁴ stress that within a given family constellation, all significant members are part of a continuous process of mutual adjustment. The effects of this process are more obvious in the younger members of the family who are vitally dependent on the constructive aspects of the family setting and usually more easily damaged by its destructive forces. Spitz^{47, 48} has given us some observations on the study of infant behavior in the nursery. Rosen⁴⁵ on adult schizophrenics.

tives,* and sometimes those who look after him during his illness. Mann, Menzer, and Standish²⁹ have written on the attitudes in a therapist influencing the course of treatment and point out that if a therapist responds with unconscious retaliation, abandonment of the patient may result.

SUMMARY

In this brief presentation, interest in the clinical psychopathologic phenomena of schizophrenic patients centers about intense ambivalent attitudes, retaliation anxiety, and specialized infantile ego mechanisms which decompensated in relationships with objects and factors tending to maintain the decompensated state. These observations lead to a further discussion of the formula^{12a} for the psychosis discussed by Fenichel, following Freud,^{27a} viz., that the two main steps involved in the clinical picture are the break with reality, and attempts to regain the lost reality. The processes are the denial of the existence of demands made by objects which are perceived by the patient as murderous, and the return of emotional relationships with objects, in distorted form, which are largely the consequence of the specialized modes of adaptation of the infantile ego.[†]

RESUMEN

El interés del autor en el fenómeno psicopatológico clínico de los pacientes esquizofrénicos, está concentrado en torno a las intensas actitudes ambivalentes, ansiedad de represalia y mecanismos especiales del *ego* infantil que se descompensan en su interrelación con los objetos y factores que tienden a mantener la fase de descompensación. Estas observaciones pueden dar lugar a una discusión adicional de la fórmula de la psicosis expuesta por Fenichel,^{12a} siguiendo a Freud,^{27a} viz., que los dos momentos principales comprendidos en el cuadro clínico, que son: 1) ruptura con la realidad, y 2) los intentos por recuperar la realidad perdida. El autor entiende que los dos momentos principales son: 1) la negación de la existencia de demandas hechas por los objetos, las cuales son percibidas por el paciente como homicidas, y 2) el retorno a las interrelaciones emocionales con los objetos, en forma

* Johnson³² concludes: 1. As a patient continues to remain in the hospital he tends more and more to lose his status and identity as a personality with multiple potentialities, both in his relationships with his family and with the hospital itself. 2. At the same time, the relationship between hospital and family tends to become more firmly established and mutually gratifying, until it begins to assume major or exclusive importance in the patient-family-hospital triad. 3. Such a relationship between hospital and family tends to stand in the way of any progress by the patient toward resumption of a secure role in the community.

† It seems to me that the patient to avoid the anxiety incident to his intense hostility must keep it out of awareness and also avoid in interpersonal relationships evocation of the same which consumes his energy. His "withdrawal" is more apparent than real in terms of his negative interest in objects so the cathectis is in the service of avoiding bruising emotional entanglements, avoiding materialization of murderous fantasies, (Talion principle type) the fantasies often being in consciousness but their associated affects repressed and/or returned in distorted symptomatology. The ego is too specialized to have gone on to more adequate all-around development for social usefulness (especially in executant and repression functions). Not only are the vicissitudes of retaliative anxiety and ambivalence operative in the schizophrenic ego development but they play a role in the ego's decompensation.

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desfigurada, las cuales son en gran parte consecuencia de los modos especiales de adaptación del ego infantil.²⁰

RÉSUMÉ

L'auteur discute les différents phénomènes psychopathologiques trouvés chez les malades schizophréniques, tels que attitudes ambivalentes intenses, l'anxiété des représailles et les mécanismes enfantins en relation avec des facteurs de l'état de décompensation. La formule discutée par Fenichel,^{12a} à la suite de Freud,^{27a} comprend deux états: (1) rupture avec la réalité; et (2) effort fait pour regagner la réalité. L'auteur est de l'avis que les deux étapes principales sont: (1) le désavouement de l'existence des demandes faites par certains objets que le malade perçoit comme meurtriers; et (2) le retour d'une relation émotionnelle avec les objets dans une forme défigurée, largement la conséquence du genre spécialisé d'adaptation dont se sert l'égo enfantin.²⁰

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Psychopathology of Infanticide*

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During the period from April 1, 1947, through December 31, 1952, 516 female patients were admitted to the prison ward of the Kings County Hospital, Brooklyn, N. Y. In this study, which is concerned with infanticidal cases, 396 cases admitted on minor charges such as disorderly conduct, third degree assault, vagrancy, etc., are eliminated from the statistics. These 396 cases do not have any bearing on female criminality. The great majority are simply psychiatric cases, such as psychotic conditions charged with minor infractions of the law.

A total of 120 female patients were admitted to the prison ward for observation on charges of felony, 17 of these cases with homicidal actions. Of the 17 homicidal cases, 9 were charged with homicidal actions committed on children and 3 were charged with felonious assault. These assaults were apparently committed with homicidal intent, and from the psychiatric point of view, this group might be considered in line with the infanticidal cases. This means that 12 cases (10 per cent of all the cases) charged with felonies belong to the infanticidal group.

In 7 of the 12 cases the victims were infants (infanticide); in the other 5 cases the victims were older children (filicide). In all cases, with the exception of one, it was the infanticidal action of the mother against the child; in one case the grandmother was involved.

The problem of criminality in women was the subject of a book by Pollak¹ in 1950 which cited statistics of convictions resulting from arrests for major crimes in New York state during 1940. These statistics corroborate a general impression that misplaced gallantry frequently interferes with the conviction of women offenders. Of 20,000 men arrested in New York state in 1940, 57 per cent were convicted; of the little over 1,000 women arrested in the same year only 43 per cent were convicted. Of 378 arrests in 1940 in New York City, 153 were women, 33 of which were on charges of homicide. In spite of the fact that a psychiatric disorder is suspected in female offenders more frequently than in male offenders and therefore warrants psychiatric examination, the admissions to the female prison ward lag far behind those to the male wards. For example, in the year 1952, of 1,107 total admissions there were only 80 female admissions.

In his book, Pollak points out that a woman who kills uses poison more often than any other means. Next to the means employed, the type of victim most frequently exposed to the female homicide deserves further attention in an evaluation of criminal statistics. In regard to homicide, the prevalence of poison as a means clearly indicates that the victims who can be most easily reached by this criminal weapon in most instances belong to the household. Pollak also stated that infanticide is declining in incidence because of the increasing practice of birth control throughout the population, and would probably continue

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to do so in the future. In a review of material collected from several countries, there is some agreement that suffocation, strangulation, and the infliction of fractures and wounds to the skull are the most frequent forms of infanticide. Pollak also stated that the various methods used in infanticide pose a puzzling question for the student of criminal statistics. The predominant characteristic of the female offender, the inclination to conceal, is perhaps no more clearly expressed than in this crime.

The purpose of this paper is to discuss some common motivations in cases of infanticide and to analyze the personality of many of the patients. The final goal of the paper is to recognize the potentialities toward infanticide evidenced by certain clinical manifestations and to recommend proper treatment once such a condition has been recognized.

The 12 cases were classified into four major groups: social pressure (3 cases), severely psychotic group (2 cases of schizophrenic disorganization), post-partum psychosis (1 case), and impulse disorder with tension state (6 cases).

The 6 cases in the last named group are those which constitute the main purpose of this paper. The group is important as it has wider implications than those of mere infanticide. Cases in both sexes in which homicide or assaultive actions were committed on members of their own family have been observed and similar personality make-up noted in all these cases. Five cases (numbers 1, 4, 5, 6, and 7) have also been described in a previous paper² dealing with a psychiatric study of homicide cases. The case descriptions necessary for illustration in the present paper are repeated.

CASE MATERIAL

Case 1: C.A., a 38 year old mentally defective woman, was first observed at the hospital from July to August, 1948, when committed on a charge of felonious assault. A newborn baby was found in the incinerator of the patient's home; at first, the patient stated that she had not given birth to the child. However, when examined at a hospital in Brooklyn she admitted giving birth to a baby in the bathroom of her home, and stated that she did not know what happened to the infant after that. The child was found with lacerations of the forehead. She presented the history of a mental defective of the ungraded class, had never been employed, remained in her home most of her life, adjusted well to housekeeping chores, and got along well with her siblings who were quite protective of her. During the first interview, she displayed childish emotionality and stated that after the delivery of the baby her mother threw the child in the incinerator; she denied having done it herself. Later she admitted freely that she had disposed of the baby, and it became obvious that she understood the nature of her charge and that it was the reason for her arrest. On psychometric examinations, the patient was rated as a low-grade moron, with an IQ of 51. When questioned about her relations to the father of the child, she showed no concern, particularly in regard to the obligation her partner might have in the case. Her sense of social responsibility was considered as low and primitive.

The court reduced the original charge of felonious assault to that of failure to register the birth of a child, and after a second observation in February, 1949, she was committed to a state training school for female defective delinquents.

Case 2: R.W., an 18 year old unmarried negro girl, was admitted on April 1, 1948 on the fourth post-partum day. She stated she had been arrested for felonious assault because she had thrown her newborn child out of the window immediately after birth. She said she had become pregnant after the second intercourse with a man whom she did not see again. She had been able to conceal her pregnancy from her mother. On March 29, her mother went to work early in the morning and the patient noticed the first labor pains at 7 o'clock. She was alone in the apartment all the time during her labor, and about 5 o'clock in the afternoon delivered herself of the child. In a condition of extreme anxiety she threw the newborn child from the second floor of her home. The patient was a high school graduate and had always been on good terms with her mother whom she claimed was an understanding woman. Her parents are divorced. Afraid to tell her mother about her pregnancy, the patient concealed it. She did not see a physician during this time, was unconcerned about the term of her delivery, and did not know it could be calculated. She stated the child was saved because it fell on paper. Did express willingness to take proper care of the child after discharge from the hospital and was returned to the Women's House of Detention in good physical and mental condition.

Case 3: B.S., a 37 year old white female, pleaded guilty to a charge of second degree manslaughter. She stated that in October, 1951, she had been raped by a 60 year old butcher who lived in the neighborhood, but did not report the incident to the police because she was ashamed and embarrassed. She claimed complete amnesia for events during delivery of the child and denied any recollection of placing it in an incinerator as charged. The record indicated she had given birth in the bathroom and placed the child in the incinerator. The baby was dead when later found by the janitor. The patient had been married eight years before and her husband had been in the army for one year. Psychologic tests showed the patient to be a schizoid personality of average intelligence. No evidence of a psychosis could be found.

Case 4: A.L., a 27 year old housewife, had turned on the gas jets in April, 1948, in an attempt to kill herself and her 4 year old child. The child was killed but the patient was rescued without any apparent physical damage.

The patient was said to have had an unhappy childhood as the oldest of six children in a poor family. She had never been able to have the nice clothes that she desired. Her mother was of the opinion that she married largely because she was unhappy at home and wanted to have the nicer things of life. The patient married at 19, after knowing her husband only a few months. He proved to be a poor provider, had a violent temper, and frequently assaulted the patient. He was also very jealous and frequently accused the patient of infidelity, although according to her mother there were no grounds for these suspicions. The husband described patient as a very poor housekeeper and claimed she did not give their three children satisfactory care. In July, 1946, patient was certified to a state hospital and diagnosed as dementia praecox, catatonic type. She received electric shock therapy and was paroled to her husband in January, 1947. According to her husband she did not adjust well on parole. An attempted suicide by gas followed an argument with her husband, and the youngest child, who was in the house at the time, was killed.

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During the period of observation the patient was seclusive, disinterested, and inactive. She appeared very depressed at times, but discussed her problems in an unemotional manner, showing disinterest in the future. She did show suspicion, evasion, and irritability. On intelligence tests she rated an I.Q. of 98, and was classified as of average intelligence. The diagnosis was schizophrenia and the patient was committed to a civil state hospital for treatment. Follow-up inquiry in June, 1950, revealed she was still in the state hospital and showed signs of deterioration and regression.

Case 5: C.R., a 46 year old negress, had killed a 6 month old grandchild by throwing her out of the window in August, 1949.

The patient had had an economically deprived childhood. Separated from her husband for 20 years, she had been left with five children and supported them herself. Depressed for a period about five or six years ago, she was not hospitalized and had been able to resume work a year later. In May, 1949, she became depressed and irritable and was examined by a private doctor who diagnosed high blood pressure and menopause. Her condition became worse. Two days before the crime she stated she heard evil spirits telling her to throw the baby out of the window. After the crime the patient told her daughter she was going to drown herself.

During the period of observation the patient was anxious, tense, and withdrawn. Stated she was possessed of evil spirits and spoke of a message from the Virgin Mary. This patient was committed to a civil state hospital in August, 1949. A follow-up study in June, 1950, revealed that she was still in the state hospital. Progress had been unfavorable and she showed signs of deterioration and regression. A diagnosis of dementia praecox was retained.

Case 6: E.G., a 28 year old housewife, drowned her infant son in the bathtub of her home in July, 1947.

The patient was a college graduate, brilliant, and had been married five and a half years. The baby was her first child, 2 weeks old when the patient drowned it. Her husband had known her for 10 years and always considered her very stable. She was fond of children and looked forward to having a baby. She was happy during pregnancy, the birth of the child was normal, and the patient seemed happy after birth. She remained in the hospital five days. After returning home she became concerned about the care of the baby and worried that she did not regain her strength rapidly.

On admission and following she showed the typical picture of stupor with motor retardation, responded very little and slowly. She was oriented and did not show any mannerisms or facial grimaces. Under sodium amytal she talked more freely. She stated she had realized she could not take care of the baby. She had been disappointed at feeling so tired after the birth and felt ashamed of disappointing the people who had considered her so capable previously. She expressed regret about killing the baby, stating she had committed a terrible crime. The Rorschach test given while she was under sodium amytal showed depressive features with almost complete and rigid withdrawal, sado-masochistic regression, isolation, and obsessive-compulsive elements. On psychometric tests she was rated as of superior intelligence.

The diagnosis was post-partum psychosis. The patient was committed to a civil state

hospital. A follow-up visit was made at the home in June, 1950. She stated she had remained in the state hospital 18 months, had been placed on convalescent status in February, 1949, and was discharged from hospital supervision in February, 1950. At first she went to live in the home of her parents, but for the past few months had been living with her husband in their apartment. She stated that she lived quietly and happily, did her own housework, and was also employed as a salesgirl and buyer in her parents' lingerie shop. Reported that she felt fine, her marital life was happy, and she and her husband were considering having another child in the near future. She had no complaints, did not see a psychiatrist, and considered herself well adjusted.

Case 7: P.W., a 24 year old housewife, killed her 3½ year old son by smothering him in November, 1948.

The patient was an illegitimate child, rejected by her mother and brought up by grandparents until her mother married when the patient was 4 years old. She was active, sociable, popular, with good school adjustment, and had two years of college. She married when 18 years old. Minor frictions arose between patient and her husband's family over the different religions of the patient and her husband. She developed a nervous condition in January, 1948, was depressed, and trembled a great deal. Treated by a private psychiatrist, she became more depressed during treatment. In May, 1948, the child became ill, ran a fever of 105 degrees, and the patient was convinced that he was dying. The child had an intestinal upset and recovered the following day. However, that night when the husband came home he found the patient sitting in the kitchen with her throat and wrists slashed. She told him that she had been planning suicide for several days but waited till the baby was better to do it. The suicidal wounds were very superficial, and the attempt was not considered serious by the doctor. She continued to talk a good deal about killing herself, but hospitalization was not considered necessary. Had a catatonic episode while visiting her parents in Illinois during the summer of 1948 but returned home at the end of August and seemed improved. A week before she committed the crime she again became moody, talked about her inadequacy, and said it was ridiculous for her to have another child as she did not feel capable of taking care of the one she had. Two days before she killed the child she telephoned her husband at his place of employment and told him she was afraid she would do something to the child. She smothered the child after getting breakfast and seeing her husband off to work.

After the crime she seemed in a daze. In the hospital she was emotionless, described depersonalization feelings, and answered questions coherently. Under sodium amytal, she contrasted the emotional poverty of her own family relations in childhood with the warmth and affection shown by members of her husband's family towards her and each other. She reiterated her feelings of inadequacy, her inability to experience any deep emotion toward her husband, and to return the emotional affection shown by her husband's family.

The patient was committed to a civil state hospital in December, 1948. Follow-up inquiry in May, 1950, revealed that deficiency in affect had continued for some months. By April, 1949, she was considered improved. She showed evidence of some desire to adjust outside of the hospital, and was paroled to her husband. In November, 1949, hus-

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band returned her to the state hospital at her own suggestion. She had begun to show tension and withdrawal, and told her husband she felt unable to cope with life. In the hospital she rapidly overcame her depressive symptoms and in February, 1950, she was discharged to the custody of her mother and went to Kansas to live with her.

Case 8: A.S., a 31 year old white female, was committed on February 14, 1952, by order of the Brooklyn County Court, on a charge of manslaughter. She had strangled her 6 month old child.

The history characterized the patient as a person who kept things to herself, was always afraid of hurting people, and had no confidence in herself although she could tell other people what to do. She was a very fastidious person and was meticulous about herself and her home. For several weeks before the birth of the child, the patient had walked about the house "in a daze" complaining about her inability to take care of her home and the child. After the birth of the baby, the husband engaged a practical nurse for one week. The patient's feelings of inadequacy about caring for the child increased and she manifested extreme anxiety, feeling that she was unable to properly care for her. She worried considerably because she could not do her housework as thoroughly as she had formerly. On one occasion she told her husband that she wasn't a good mother and wasn't worthy to have a baby. If it rained and she was unable to take the baby out she became extremely upset, saying that without fresh air a baby was not properly cared for. Once she suggested her husband call the police, that she was no good for the baby. Upon the advice of a family doctor, the patient was taken to a psychiatrist. She was given two electric shock treatments, but refused to go after the second treatment, stating she did not think the treatments were doing her any good. The husband confirmed the fact that patient's parents kept their children dependent for a longer period of time than was necessary, and the husband stated he felt the patient married in an attempt to emancipate herself from her parents and get away from her home and family.

Projective tests in this hospital showed hysterical features, and it was felt the patient was an individual who might at times act irrationally. She was described as a dependent person showing little emotional differentiation. Her IQ was 102 (average).

During all the interviews the patient was tense, apprehensive, and depressed when talking about her situation and her charge. During the ward activities, however, she appeared to be rather indifferent about her situation, and could be easily distracted by playing games with the other patients, and by reading. She presented a history of personality difficulties since early youth, and had always complained of being babied by her parents who did not allow her any responsibilities. Six years previously she had seen a psychiatrist for the first time because she felt unable to adjust to her job. She showed feelings of inadequacy with regard to her abilities, stating that she could do routine work as a stenographer or typist, but could not take up any responsible work such as bookkeeping. In an attempt to emancipate herself from family ties she married for the first time at 19, but this marriage ended in divorce. She married a second time in 1946 and described a happy and congenial marital life. After worries about being sterile, she became pregnant at the beginning of 1951 and nine months later went through a normal delivery. Some months afterwards she became

depressed, and had the feeling she was unable to take care of the child or assume the responsibility of bringing it up properly. She blamed her parents for this feeling, and had strong suicidal urges. It was at that time she received the shock treatments. She was under the influence of auditory hallucinations, frequently heard voices telling her to kill herself, and making derogatory remarks about her. She also had ideas of reference, thought that people talked about her and called her a fool. During the first interview she claimed amnesia for the event leading to her indictment, and stated that she didn't remember it. During an interview under the intravenous injection of a drug, she remembered all the events, stating that she had an urge to kill herself and finally choked the child. She did not express much remorse about killing the child, but felt sorry that she might have ruined her father's health. She admitted she felt somewhat relieved after killing the baby and no longer had suicidal ideas. She expressed some depersonalization feelings, stating that when she woke up she sometimes felt puzzled and everything looked as if it were mixed up.

On March 15, 1952, after commitment, she was transferred to a civil state hospital.

Case 9: E.S., a 30 year old white female, was committed for mental observation by order of the Queens Felony Court, on May 1, 1952, on a charge of killing her 4½ year old daughter.

The patient had been married for nine and a half years. She was described by her husband as a "wonderful mother" in that she had shown great concern for her two children, aged 7½ and 4½. Her early family background, however, was unfavorable. The patient's father left the family when she was very young, and the mother was forced to work. Patient was placed in the Tarrytown Home for Children for a five year period, until the age of 11. She had one sister, but had never been close to her. The patient was described as looking after the physical needs of the children and always keeping the home in a very good order. She would even stay up nights making clothes for the children. She was easily upset by little things and on several occasions threatened to separate from her husband. Their sexual relationship had never been entirely satisfactory to the patient; she complained that she did not get sufficient pleasure from it. The 4½ year old girl, who was killed by the patient, was described by the husband as especially attractive and "full of life." The patient had always shown extreme anxiety concerning sickness of any kind, and this even extended to a horror of cemeteries or anything connected with death or funerals. Whenever the child had had any of the childhood diseases the patient became so upset that her husband had to stay home and be with her. This happened on several occasions. Once when one of the children was sick, she hired a sitter and took a job in order to be out of the house. Shortly before the event leading to her charge, the 7½ year old daughter became sick with measles, developed pneumonia and encephalitis. When it was necessary to take the girl to the hospital, the patient showed extreme anxiety and repeatedly said the child would die. She anxiously watched over the 4½ year old girl and felt this child was also going to get sick. She became depressed, and patient and husband gave the child special attention, which included rubbing her with oil. Patient said she was unable to care for the child as she wasn't strong enough herself. However, her anxiety seemed to have lessened enough so that the husband felt he could resume going to work. It was on this day that

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he returned home to learn the patient had strangled the child. The patient showed little emotion when asked why she had done it, but said she couldn't care for the child and that it was better off dead. Husband stated that patient was a very sensitive person who was easily upset, and would have short periods when she was somewhat depressed. In the fall of 1951 she had had a two week period when she had some fantasy that Jimmy Durante was her real father. She said he resembled her own father in many ways. She got a book on Jimmy Durante and read all about him. Finally decided that she had been imagining all this.

Psychologic tests showed she was no longer able to deal with her responsibilities adequately, and that her fear of losing control had precipitated anxiety which was not, however, functioning as a type of defense which could forestall inappropriate behavior. Her IQ was 98.

The findings on physical examination were essentially negative. Electroencephalogram was also negative.

The mental examination on admission was described as follows: Patient is perplexed and emotionally blocked, has some difficulty in concentrating her attention on proper answers. She associates with the other patients in a proper way, and occupies herself in the ward with jig-saw puzzles. She stated that the pregnancy with her first child showed a normal course, but during her second pregnancy she started to worry about her ability to give the children proper care and made attempts to terminate the pregnancy by taking pills. Her worries became aggravated by statements of her husband that she (the patient) had been brought up without a father, and that children needed a father for proper raising. She admitted that she frequently argued with her husband about the way the children should be brought up, and often became involved in doubts about whether or not she took proper care of them. She even considered separation from her husband, but didn't do it because of the children. All her doubts and preoccupations became aggravated when the $7\frac{1}{2}$ year old child developed measles and had to be sent to Queens General Hospital. In the days before the event leading to her arrest occurred, she felt unable to give the $4\frac{1}{2}$ year old child proper advice as to whether to go down on the street or not. She described panicky feelings with thoughts centered around the way she was to treat the children. She was still perplexed, but said she felt somewhat released and better in her present condition. She did not show guilt feelings adequate to the crime which she committed, said without any emotional expression that she might die for it, and she was willing to take the consequences. When questioned about previous suicidal attempts, she wrung her hands and was unable to give proper information. No hallucinations or paranoid delusions could be elicited from her. When interviewed with methedrin she did not reveal any new productions and did not show any special emotional upset. She continued to be perplexed when the circumstances of her crime were discussed and was unable to give any motivation. When questioned as to whether she ever felt like committing suicide she said she felt very strange when the oldest child had had her first sickness at the age of $3\frac{1}{2}$ months while the husband was in service.

On June 3, 1952, the patient was transferred to a civil state hospital after court commitment.

Case 10: G. L., a 44 year old white female school teacher, was admitted to the hospital on October 10, 1951, after stabbing her 10-year-old daughter.

When interviewed she gave the following information: "Yes I did, I do not know why. I was . . . I was crazy about her. I do not understand it. I was under the care of a private psychiatrist. A couple of weeks I was under his care. He gave me shock treatments at home. I did not want my youngster to go out. I wanted her with me all the time. I lived with my mother-in-law. She took care of my child while I worked. I had all sorts of crazy notions during the summer. I thought everybody was watching me. I found it very difficult to concentrate on work when I went back to school in September. I read in the paper about the counterfeit money. I looked at money and I could not even tell whether it was good or not. It seemed that everybody who was giving me money was turning the black side down." On another occasion she said, "I always knew that I couldn't leave her alone when I was teaching school, without leaving her with someone who was capable. I used to worry about that and about finances. We had a lot of trouble, a lot of expenses with the home. My husband had been working with some special work. Some man called me up and said he wasn't working at night at all, but was having a good time. I just went all to pieces. My daughter . . . I was afraid, every time I went out I was afraid she was going to be killed. I wouldn't even let her go out with her grandmother."

On admission the patient stated that in March and July, 1951, she stabbed herself in the neck and wrists, and tried to commit suicide. She received 10 shock treatments during the late summer.

Psychometric testings found her to be of very superior intelligence, with an IQ of 124. Penned-up power drives and hysterical repressions were evident from the psychologic personality tests.

On mental examination the patient was found to be in a severely agitated depression and had the above mentioned delusions of reference. She was committed to a civil state hospital.

Case 11: C. F., a 23 year old white girl, was charged with homicide after smothering her illegitimate 7 month old son with a pillow after an attempt to poison him with iodine had failed. She then attempted suicide with iodine. On two previous occasions she had attempted suicide by cutting her wrists. The patient was the youngest of seven children, six girls and one boy. Her parents were always strict, particularly her father, and sooner or later most of the children showed hostility towards the parents. The patient graduated from grammar school at the age of 16 and entered high school, but left after three months. Her school work was poor. After leaving school she had a variety of jobs for a period of six years. She was frequently fired from her jobs. She stated that she had had "quite a variety" of sex relations prior to marriage. At the ages of 13 and 15 a young man forced her to have relations. At 20 she had relations with a young man the first time she met him. Some time later her mother found a condom in the hall and her father made her sign a statement that she had had sex relations many times, in order to force her to stay at home. It was about this time that the patient cut her wrists for the first time. After this she lived away from home. Some months later she cut her wrists again, following a quarrel with a boy friend whom she loved and wanted to marry. Later the boy forced her into a sex act

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which resulted in pregnancy. She then learned this man was already married. After the birth of her illegitimate son, she married a man 26 years her senior, following one month of courtship. A few months after marriage she became pregnant. Her husband showed resentment about the pregnancy and kept repeating he would be unable to handle the additional financial burden. She indicated a great deal of tension between herself and her husband for three days before she killed her child. Under examination at the hospital she revealed no psychotic symptoms. During the interview the patient revealed no indications of guilt, but rather tried to project her difficulties to her family. On intelligence tests she rated a composite IQ of 97, (verbal IQ 93, performance IQ 109). Projective tests revealed a basically hysterical personality with repression and projection mechanisms prominent. Emotionally she was shallow, immature, and incapable of accepting an adult role. The diagnosis was recorded as schizoid personality.

Case 12: R. P., a 28 year old woman was charged with homicide following the death of her 2 year old daughter in May, 1952. She denied the charge, claiming that the child fell, striking her head on the floor, and died 5 minutes later. In the hospital the patient showed no anxiety or mourning. She was concerned only about her own defense. After intravenous injection of 20 mg. of methedrin she showed some emotional response, but continued to insist on her innocence. Physically she showed marked secondary anemia. Case history revealed that she was brought up in a very poor home environment; her parents separated when she was 4 years old. Her father was a chronic alcoholic and she saw him only occasionally. The patient's husband stated that she was always very nervous during her pregnancies. Under pressure she would drop things, act in a confused manner, and complain that she could not do her work adequately. Her first child was regarded as a behavior problem and the patient frequently spanked her. In March, 1950, the patient had a stillbirth. She suffered from hemorrhages after the birth and was unable to care for the older child properly. She was even taken to the Domestic Relations Court, charged with beating the child severely. A psychiatric examination at that time, two years prior to this arrest, reported her as having various nervous complaints, including constant feelings of weakness and fatigue, associated with worry about her children for two years. She dated these symptoms to the loss of her second child after a premature birth. During her second pregnancy she suffered with frequent dizzy spells, in addition to her worries about the health of her sickly first child whose care entailed considerable financial obligation. Prior to the events leading to her arrest on the homicide charge, the child had been sick with a skin condition which caused the patient considerable anxiety. She worried that the infection might spread and become serious, and watched the child closely. Intellectually she was classified as average, with an IQ of 96. Projective test results were summarized by a report that her apparent life-long experiences of emotional deprivation and lack of positive stimulation had resulted in serious character pathology, and in a defensive rigidity and inflexibility which caused a breakdown of control under stress. Examination showed no evidence of a psychosis and the diagnosis was character disorder with neurotic features.

DISCUSSION

SOCIAL PRESSURE

The first 3 cases were classified in the "social pressure" group since it was essentially social pressure which had prompted the patient's behavior. One of these is a mental defective case and needs no particular discussion inasmuch as it is clear in its genesis. This group (3 cases) is not well represented in the series, although it is felt that these cases are very frequent in court practice. The reason there is so little evidence of this type is that these persons are not referred to the female prison ward for psychiatric observation because the motivation of their behavior is obvious. The number of unmarried girls who try to dispose of their newborn infants in order to escape public attention is no doubt very great.

It is, moreover, social pressure which was emphasized as the main factor in the motivation of infanticide in recent years by Wertham³ in his case description "Medea in Modern Dress." He referred to the tragedy written by Euripides, and considered Medea as a victim of social circumstances, stating that a really complete history of the subject of infanticide alone would read like a story of the development of culture. "In most cases of infanticide the heaviest responsibility is not intrapersonal, but lies in adverse social circumstances which counteract the development of expression of normal maternal feelings." Margaret Mead⁴ writes "the mother's nurturing tie is apparently so deeply rooted in actual biologic conditions of conception and gestation, birth and suckling, that only fairly complicated social arrangements could break it down entirely." However, it is felt that except in a group for which the social conditions are unbearable, as in the case of young unmarried mothers, the social pressures are not the essential factors in the causation of infanticidal behavior. In all cases, whether psychotic or not, whether mentally defective, or of average or above average intelligence, statements were made by the patients concerning their inability to take proper care of the children, and that this inadequacy was frequently projected to the social environment. In the present paper the interest is focused on the personality make-up and the particular emotional constellation of the patients.

SCHIZOPHRENIC PSYCHOSES

There were 2 cases in which the infanticidal action was committed in instances of severe psychosis. In the fourth case, it is an instance of schizophrenic deterioration, and it is obvious that the patient's emotional blunting which is caused by her schizophrenic process is the main causative factor. It is, however, interesting to notice, even in this case, that the patient rationalized her action by her social situation. She had an extremely difficult childhood, and considered herself forced to marry at an early age in order to escape the difficulties of her parental home. Her husband was a poor provider, and following her discharge from a state hospital in a state of remission her home conditions remained unfavorable.

The fifth case, a 46 year old negress, who killed her 6 month old granddaughter by throwing her out of the window, stated she acted under the compulsive influence of auditory hallucinations. The patient admitted preoccupation with the fact that this was the illegitimate child of her daughter. She stated she was possessed by an "evil spirit" and that

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she heard the spirit's voice. She also stated she had received a message from the Virgin Mary commanding her to wander around the earth.

The relation between suicide and infanticide will be discussed later though mention might be made of a recent paper by Farrar⁵ which described three main kinds of suicidal motivations—the malignant deliberate type, the impulsive type, and the compulsive type. The third type, the compulsive type, is usually seen in schizophrenic conditions when a person commits a suicidal or homicidal action under the influence of a voice which commands him to do so. In the fifth case, there is a typical example of such a compulsive infanticidal action.

POST-PARTUM PSYCHOSIS

In spite of the frequency of post-partum psychosis, frequently associated with suicidal tendencies and which simultaneously endangers the life of the newborn child, there was only one such case in the present material. Bender⁶ mentioned a paper from Great Britain, by J. Stanley Hopwood, written in 1927, in which 166 cases of infanticide were reported; 83 were diagnosed as lactation psychoses, and 90 per cent of them recovered. It is obvious that modern psychiatric care prevents infanticidal actions, inasmuch as the mothers show unusual behavior soon after birth, they are given proper psychiatric treatment. It is interesting in the case described here that when the patient first complained of fatigue this symptom did not arouse any suspicion as to the beginning of a psychotic condition. Feelings of inadequacy with regard to giving proper care to the child were the main complaint of this case, too, and were considered as symptoms of a toxic condition. There was no social pressure factor in this case, and the patient's complaints about her inadequacy were obviously symptomatic of a depressive psychosis.

In a recent article De Armond⁷ discusses a type of anxiety reaction represented by carefully selected cases of post-partum disturbances. Although anxiety was the predominant symptom in these cases, there was evident depression which was regarded as of secondary importance and seemed to be a resultant rather than a causative factor. The mothers felt incapable of carrying out the routine household duties in addition to performing activities outside the home. He gives an illustrative case of a 27 year old well adjusted, intelligent woman who developed anxiety symptoms with feelings of unreality and depression following her delivery, at the same time having certain obsessions with regard to an older 3 year old daughter. "When she hurt herself I felt as if the hurt happened to me and I felt the pain myself. . . . I am concerned if she is hurt, I am sorry for her just the same, but I feel different. I wonder if I don't love my daughter as much as I used to."

This case had definite similarities to cases described in the fourth group, in so far as anxiety, depression, obsessional preoccupation with the well being of the children, and emotional feeling toward the children are concerned. The majority of these cases are, no doubt, benign and short-lived, and respond well to psychotherapy. One of the cases (case 8) developed the condition during her pregnancy, the depression becoming aggravated in the post-partum period. Her condition was, strictly speaking, a continuation of a gestation psychosis. Later on, it will be shown that the accompanying depression is regarded as not of

secondary importance. The sixth case shows that with vague neurotic complaints on the surface, the deep underlying depression can be easily overlooked.

De Armond explains the condition by a change of body image. The presenting symptom of anxiety subsides as reorganization occurs. The personality is stabilized when the patient is able to identify herself in her new role of mother. Pregnancy appears to be a particularly appropriate time to study the mother's experience in terms of body image.

In their book, Klein, Potter, and Dyk⁸ described in great detail anxiety reactions of pregnant women and related their findings to the degree of emotional stability and maturity.

CHILD CENTERED OBSESSIVE DEPRESSION

The fourth group consists of 6 cases which have certain characteristics in common. Those are: infanticidal action without any obvious precipitating factors, long standing tension state, depression with suicidal tendency and self-derogatory trends, obsessional preoccupation with the health of the child, and difficulty in the parental home situation.

The unpredictability of the infanticidal action, and at the same time the fact that this action is often of a complex nature, is sufficient to classify it as a so-called short-circuit reaction. Kretschmer,⁹ in his book *Medical Psychology* describes three kinds of primitive reactions—hysterical, explosive, and the short-circuit reactions. According to his theory, an excessively strong experience stimulus breaks through and paralyzes the higher levels of personality which are concerned with deliberate planning. The lower phylogenetic levels of the psyche are stimulated separately. He states that even healthy adult members of civilized stock may sometimes exhibit such syndromes in response to the experience of excessive shocks. In cases of arrested or inhibited psychic development, psychopathic conditions and schizophrenia, two schizophrenic cases were mentioned above, the experience stimulus need not be exceptionally strong. In explosive reactions there is a condition usually seen in cases of pathologic alcoholic intoxication. The short-circuit reactions differ from the explosive reactions in that they involve complex actions whereas in the explosive reactions there is a form of primitive motor discharges. Kretschmer mentioned that infanticide by unmarried mothers is for the most part a typical short-circuit reaction. This reaction may be accompanied by a clouding of consciousness, or may be accomplished after the fashion of normal actions with deliberation, foresight, skill, and full consciousness. The cases were rarely accompanied by amnesia, or if amnesia was found, it was easily lifted either spontaneously or by the help of a drug (sodium amyta or methedrin). Bender, in her paper, mentions that her patients were mostly consciously amnesic although there was evidence of unconscious knowledge of it.

The question as to whether a patient claims amnesia for the deed or remembers it fully is not of decisive importance even in the legal aspects. The fact, however, that the majority of patients remember the deed fully is evidence that the consciousness is not clouded to an essential degree in the majority of cases. An organic condition has never been found in these cases, and none of the patients was epileptic. An electroencephalogram was done in the majority of the cases, but always showed normal results. The time-honored differentiation

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between impulsive action and deliberate action does not give any information about the dynamics of the action. The complex actions could be perpetrated as a short-circuit reaction as a result of a severe emotional tension, and it is sometimes difficult to differentiate between them and the mere rage reaction which obviously denotes clouding of consciousness. These actions are often perpetrated with certain motor skill and with adequate deliberation with regard to the crude motor act. What is lacking in this case is the abstract attitude, the higher deliberation with regard to a solving of the situation. It is noteworthy to state that none of the patients mentioned showed evidence of previous criminal tendencies, although all had definite personality difficulties. None of them could be classified as criminally psychopathic.

The fact that long standing tension is causative of unpredicted violent behavior was discussed several years ago by Wertham.¹⁰ In his book *Dark Legend* he described a case of a 16 year old boy who stabbed his mother to death with a bread knife while she was sleeping. He described the dynamics in some detail and classified this case as that of a so-called catathymic crisis. Wertham first came across this problem when analyzing the case of Robert Irwin who killed 3 persons at the same time and had made a previous attempt at self-emasculation. In 1937 Wertham¹¹ defined catathymic crisis as a clinical entity, stating that the concept of catathymic behavior was introduced by Hans W. Maier in 1912. A catathymic reaction is thought to be a transformation of the stream of thought as a result of certain conflicts of ideas that are charged with either a strong affect, usually a wish, a fear, or an ambivalent striving. While it has been known for a long time that a catathymic disturbance might influence the thinking and give rise to delusions of persecution or delusions of reference, Wertham noted the fact that violent acts are carried out against others or against oneself as a result of catathymic ideation. The transformation of the psychic content by affective influences, which is synonymous with catathymia, was discussed in Kretschmer's book⁹ in some detail.

The prevalent idea which influenced the thinking as well as the actions of these patients was an inability to function properly in the care of the children; this idea is often closely associated with previous childhood experiences, such as neglect on the part of the parents or feelings of inability to assume independence. Why such a condition leads finally to homicidal or suicidal actions will be discussed later. It was originally Wertham's¹⁰ idea that the catathymic crisis, which he considered a disease entity, shows certain characteristic stages, that the act was usually premeditated at the time the crisis reached a crystallization point, and that this premeditation is frequently covered up by rationalizations. However, in the instances described there was no such typical sequence of events as described by Wertham. The fact was confirmed, however, that a certain stereotype thinking leading to egocentricity frequently preceded the violent act. It has been mentioned before that the violent act is mostly a short-circuit reaction, sometimes associated with amnesia. Whether the infanticidal action manifests itself in an incoordinated rage which is accompanied by clouding of consciousness and amnesia, or whether it is a complex reaction in the form of a short-circuit reaction is rather insignificant. Alcohol intake prior to the action might cloud the consciousness and thus give rise to an explosive rage reaction. On

the other hand, the action might be carried out in a skilled and coordinated manner, as has been known in cases of premeditated suicide.

Four of the 6 patients had a definite depressive reaction; depressive features were also present in 2 other cases. Suicidal tendencies were found in almost all these cases. In 4 of them depression was the predominant symptom. The depressive ideas were characterized by a feeling of worthlessness and inability to give proper care to the children. Of particular interest is the combination with suicidal tendencies. It has been known for a long time that homicidal acts were committed by persons with affective depressive psychosis. The homicidal acts were in the majority of the cases committed against persons who were close family members. Kretschmer⁹ states that anxiety can also cause similar explosions such as anger and annoyance; and that such explosive reactions have been described in melancholia under the term "raptus melancholicus." In such a state of raptus, anxiety and desperation can surge up critically and lead not only to suicide but also to terrible acts of violence, especially in the murder of the patient's own family. In a previous paper² it was mentioned that a great number of homicidal patients whose cases have been described showed suicidal tendencies or made suicidal attempts at one time or another. In Bender's article⁶ which was mentioned previously, child murder was considered a suicidal act as a result of an identification process. This author stated that it was not primarily an expression of conscious or unconscious hatred of the child. Bender attributed it to a tendency of the mothers to project their symptoms into their children so that the child might become the hypochondriacal organ, and what may first be a suicidal drive may gradually be converted into a tendency for the mother to kill both herself and her child.

Considering the dynamic mechanism of introjection, it is the original aggression against one parent or a parent surrogate which is internalized and the aggravation of this mechanism which leads to depression and subsequent self-destructive tendencies. This is considered to be an unconscious mechanism. The reasons why patients showed depression with suicidal ideas and conscious hostility towards the parents simultaneously will be discussed later. The fact, however, remains that the majority of the patients showed definite depression with suicidal tendencies.

Associated with the above mentioned depression in all cases is an obsessional preoccupation with the health of the child. The patients often appeared, on the surface, to be extremely meticulous and overconscientious. They frequently expressed worries about the well being of the child and were prone to develop severe panic if something happened to the child if, for instance, the child developed fever due to a mild upper respiratory infection. This obsession is frequently produced in a ruminating manner, and is repeated in a stereotyped way. The obsession is in most cases a fear that something might happen to the child. In one case (case 7) it was the obsessional thought to kill the child. The fear that the child might die was expressed by most of the patients, but usually in the form of a worry that something might happen to the child.

It is generally believed that obsessional ideas, which usually take the form of fears or wishes of a malicious type, are never carried out in reality. The psychoanalytic theory of obsessional neurosis in which a patient has full contact with reality is that aggressive feelings

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which are originally directed towards one parent or a parent surrogate are displaced towards some other object. The patient satisfies his hostile feelings by the obsessional idea, and on the other hand, his tendency to self-punishment is satisfied by his suffering from the neurotic symptom. He always chooses as objects of his obsessions persons who are close to him, and his well preserved sense of reality as well as his tendency to self-punishment protect him from carrying out his obsessional wishes in the form of violent actions. The cases described constitute a definite exception to this rule and the reasons for this exception are obvious. As mentioned before, the obsessional thoughts are symptomatic of a depressive state with suicidal ideas. The depressive state weakens the ego functions, suicidal tendencies become manifest, and the child that is considered as part of the person's own body is the victim of self-destruction. In some cases in which suicide was originally intended, the suicidal action was stopped or was aborted after killing the child. It would be wrong to state that in such cases there is primarily a conscious or unconscious hatred of the child. In the previously mentioned paper, Bender⁶ makes a statement to the effect that no such feelings exist in reality. From the psychodynamic understanding of obsessions, it is known that the object of the obsessional preoccupations, which in this case is a child, is only a scapegoat; that due to the disguising mechanism of displacement the original aggression and hostility are directed towards someone else, either a parent or a parent surrogate. This is obvious from a consideration of the family histories of most of the patients.

The difficulties in the parental home situation are characterized by ambivalent feelings towards the parents, the hostile feeling against the parents or a parent surrogate being the predominant factor. This is not considered an etiologic or causal factor, but the history of an unfavorable home environment was given by all patients spontaneously; some of the patients showed a constant tendency to project their actual difficulties to their parents. This is in line with the psychoanalytic theories which were discussed a great many years ago by Zilboorg¹² who stated that depressive reactions in the patients associated with death wishes directed against their children were the result of the guilt reaction to unconscious incest drives. Psychoanalytic workers who investigated the problem of homicide have come to the conclusion that the victim is often a subject of displacement. This problem was discussed in some detail in a previous paper.² Karpman¹³ reported an analysis of a 31 year old white male who fatally shot a street car conductor whom he held up. The whole sexual history revealed an increased incestuous attachment and showed that the homicide represented an emotional discharge of accumulated hostility and that the victim played no individual part in the picture.

It has also been mentioned that in infanticidal cases there is a complicated dynamic mechanism which manifests itself in introjection with suicidal tendencies, identification with the child victim that is regarded as a part of the body, and finally displacement of hostility from a hated parental figure.

DIAGNOSIS AND CLASSIFICATION

Classification of these patients into some of the well known categories is always difficult, and classification of some cases as catatonic schizophrenia, psychopathic personality, or

inadequate personality alone does not give satisfactory understanding of these cases. The catathymic ideation of these patients was mentioned before, and in this connection attention is directed to the classification in Muncie's book¹⁴ *Psychobiology and Psychiatry*. Muncie classifies four depressions under the heading of topical depressions, the hypochondriacal depression, the tension depression, the catathymic depression, and the thymonoic reaction. He draws attention to the fact that catathymic ideation often gives rise to depressive reactions, that the manifest depression is often masked, and that the suicidal risk is great in these conditions. In 4 of 6 patients there was a definite history of a depressive reaction prior to committing the act. In the other 2 cases there was no definite history of depression, although in one there was a suicidal attempt at cutting the wrist. It is necessary to emphasize the fact that true depressive reactions are often masked. There is a definite danger that the condition might not be diagnosed in its real importance. Since 1952 there has been a new classification of mental disorders¹⁵ based on the need for a better dynamic understanding, because the differentiation between psychoneurosis and psychosis is often difficult and arbitrary. This is particularly true in the case of depressions. Previously there was differentiation between the reactive or neurotic depressions and the psychotic depressions which are either manic depressive or involutional. This differentiation has always implied differences in suicidal risk, meaning that the suicidal risk is smaller in the neurotic depressions. In *A Criticism of the Concept of Neurotic Depression*, Ascher¹⁶ reviewed literature dealing with the subject and cited a series of almost 100 patients admitted to a psychiatric clinic and diagnosed as suffering from "neurotic depressive reaction." He considered the division of neurotic and psychotic depressions as an arbitrary one and stated that there is great confusion in the description of these conditions. The danger of suicide in the so-called neurotic depressions should be considered as great as in the so-called psychotic depressions.

In evaluating these cases it is evident that the majority are primarily of a type previously classified as psychoneurotics. These cases did not show any clear-cut evidence of a true schizophrenic disorder, nor was it possible to classify them as manic depressive psychosis. In some cases a psychotic condition was superimposed and manifested itself mainly in a depression with suicidal tendencies. It is the combination of the catathymic thinking, the obsessional fears, and the depression with suicidal tendencies which was considered as causative in the formation of short-circuit reactions leading to infanticide. These conditions were called "child-centered obsessional depressions," which implies the child-centered catathymic ideation as well as the depressive features and their combination with obsessional fears. Some of the patients showed projective mechanisms so that it appeared necessary to differentiate between them and schizophrenic cases. Case 8, a woman who showed a definite depression with self-derogatory trends, heard voices telling her to kill herself; these voices also made derogatory remarks about her. Hallucinatory experiences whose content is in full line with the depression, that is, voices telling the patient about her unworthiness and commanding her to commit suicide, are occasionally found in affective-depressive psychoses. This patient and case 10 also had ideas of reference. In both cases

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there is no doubt, however, that the depressive psychosis is in the foreground and that the projective mechanisms developed secondarily.

As mentioned before, the majority of patients whose hostility is poorly repressed showed a tendency to project the blame for their actual inadequacies to their parents.

Another feature which might be conducive to diagnosing such a case as a schizophrenic psychosis is the immediate reaction of the patient to the crime. In some cases it is possible to miss some overt guilt reaction to the act, and thus be inclined to attribute this to emotional flattening. There should be no surprise at finding such a patient in a state of definite relief from long-standing emotional tension and in a slightly euphoric mood, in obvious contrast to the serious situation in which the patient finds herself. Careful study soon indicates that a deep depressive psychosis with suicidal tendencies is at the root of the disorder, and that the tension relief can be understood easily from the fact that the infanticidal action has been a symbolic suicide which, in turn, is the atonement for conscious or unconscious guilt feelings.

The practical point of these considerations is focused upon recognizing the potentialities. Of course, a mother who is obviously preoccupied with the well-being of the child, or a woman who is suffering from a true obsessional neurosis with death wishes or death fears towards the children, would not be classified as dangerous. It is the combination of this cataleptic thinking with the obsessions and with the suicidal depression which makes the case dangerous. A woman whose content of thought is dominated by feelings of inability to give proper care to her child and who in addition has obsessional fears that something may happen to the child whenever the child has the slightest impairment of health needs particular attention. If it is known that such a woman has made a suicidal attempt or has suicidal preoccupations this case would be classified in the above mentioned category of "child-centered obsessional depression." As mentioned before the depression is not always manifest, and there is some temptation to disregard or minimize suicidal attempts of these patients, who are considered as basically psychoneurotic according to the old classification. There were 2 cases in which there was no obvious depression, either on mental examination or by reviewing the history. One of these women, of course, had made a suicidal attempt by cutting her wrist. In these cases it was the combination with the social pressure which precipitated the infanticidal action.

TREATMENT AND PREVENTION

Failure to recognize the potentialities in these cases is instrumental in causing improper management of such patients. Two patients in which depression was the outstanding symptom were treated on the outside with electric shock treatments which finally proved unsuccessful. The reason for failure of the shock treatment to improve these patients is obvious. Deep-seated personality problems are at the root of the patients' difficulties and it is felt that these patients should be essentially treated with analytically oriented psychotherapy. Shock treatments might be necessary as an adjunct for treating the depressive condition, but should always be followed by psychotherapy. One patient (case 7) treated with psychotherapy at the office of a private psychiatrist was obviously considered as a

mere psychoneurotic, despite the fact she had made suicidal attempts and had a temporary stupor condition. Once this condition is recognized with the inherent potentialities the patients and their families should be advised as to hospitalization. If the danger of infanticide is not mentioned, the family must be convinced that the suicidal danger is very obvious. The hospital treatment should concern itself with psychotherapy and should make use of temporary electro-convulsive therapy as long as a severe depressive condition makes the patient inaccessible for psychotherapy.

SUMMARY

In the 57 months covering the period from April, 1947, through December, 1952, 120 female prisoners were admitted to the prison ward of the hospital charged with felonies. Twelve of these patients (10 per cent) were charged with infanticidal acts. In 3 of the cases social pressure was considered essential for committing the crime. There is 1 case of a post-partum psychosis, and 2 cases in which the child murder was committed in a state of schizophrenic disorganization. Six cases were considered under a special heading. The syndrome may be described as a "child-centered obsessional depression." The syndrome is characterized by a feeling of inability to give proper care to the children, obsessional thoughts with regard to the well-being of the children, and a depressive state with suicidal tendencies. There is some indication that the depressive condition is often overlooked or not recognized in its severity. The psychologic connection between suicidal and homicidal action is discussed in some detail. The final purpose of this paper is to draw attention to this syndrome with its suicidal and homicidal potentialities, and to make disposition as to proper treatment as soon as this condition is diagnosed.

None of these patients had histories of delinquency or criminal behavior prior to the act of infanticide. Proper and early treatment of this condition might keep such patients in the community and in the family and prevent this type of crime which, in most cases, disrupts the family unit so tragically.

RESUMEN

En los 57 meses comprendidos entre el mes de abril de 1947 y diciembre de 1952, ingresaron en la sala de presos del hospital de los autores de este trabajo, 120 mujeres acusadas de delitos criminales. Doce de estas pacientes (10%) habían cometido actos de infanticidio. En 3 casos la realización del crimen fue motivado esencialmente por razones de presión del ambiente social. Hubo un caso de psicosis post-partum y 2 infanticidios fueron descritos como cometidos en estado de desorganización esquizofrénica. Seis otros casos fueron clasificados bajo una denominación especial. Ninguna de estas pacientes poseía antecedentes criminales ni de haber convivido en un medio ambiente indeseable antes de haber cometido el delito que se les imputaba. Esta comunicación se refiere a un síndrome que los autores describen como "depresión obsesiva centrada en torno al hijo." El síndrome se caracteriza por un sentimiento de incapacidad para tener cuidado de los niños, pensamientos obsesivos en relación con el bienestar de los niños y un estado depresivo con tendencias suicidas. Los autores sostienen que el componente depresivo pasa frecuentemente desa-

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percibido o no se reconoce su gravedad. La reacción psicológica entre la acción suicida y homicida, se discute en este trabajo con algún detalle. La principal finalidad de este estudio es llamar la atención sobre este síndrome específico con sus potencialidades suicidas y homicidas y adoptar las medidas apropiadas para su tratamiento adecuado.

RÉSUMÉ

Dans les 57 mois entre avril 1947 et décembre 1952, 120 prisonnières accusées de crimes furent admises dans l'hôpital de l'auteur. Douze de ces malades (10%) étaient accusées d'actes infanticides. Dans 2 de ces cas, une pression sociale était considérée comme ayant joué un rôle essentiel dans le crime. Une des malades présentait une psychose post-partum, et dans 2 autres cas, le meurtre d'enfant fut commis dans un état de désorganisation schizophrénique. Six cas furent considérés à part. Aucune de ces malades n'avait une histoire de conduite criminelle avant l'infanticide. Cet article décrit un syndrome que les auteurs appellent une dépression obsessionnelle avec l'enfant comme centre. Ce syndrome est caractérisé par un sentiment d'être incapable de donner les propres soins aux enfants, par des pensées obsessionnelles sur le bien-être des enfants et par un état de dépression accompagné de tendance vers le suicide. Les auteurs maintiennent que cette condition de dépression est souvent négligée ou n'est pas reconnue comme étant sévère. Le lien psychologique entre l'action du suicide et de l'homicide est discuté en quelques détails. L'article attire l'attention sur ce syndrome avec ses possibilités de suicide et homicide pour permettre la prise de certaines dispositions pour son traitement.

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QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

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Incorporating the International Record of Psychiatry and Neurology

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INCORPORATING INTERNATIONAL RECORD

OF PSYCHIATRY AND NEUROLOGY



FOREWORD

The purpose of the QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY is to present promptly brief abstracts, noncritical in character, of the more significant articles in the periodical medical literature of Europe and the Americas.

For reader reference, the abstracts are classified under the following general headings:

PSYCHIATRY

1. Administrative Psychiatry and Legal Aspects of Psychiatry
2. Alcoholism and Drug Addiction
3. Biochemical, Endocrinologic and Metabolic Aspects
4. Clinical Psychiatry
5. Cariatrics
6. Heredity, Eugenics and Constitution
7. Industrial Psychiatry
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9. Psychiatry and General Medicine
10. Psychiatric Nursing, Social Work and Mental Hygiene
11. Psychoanalysis
12. Psychologic Methods
13. Psychopathology
14. Treatment
 - a. General Psychiatric Therapy
 - b. Drug Therapies
 - c. Psychotherapy
 - d. The "Shock" Therapies

NEUROLOGY

1. Clinical Neurology
2. Anatomy and Physiology of the Nervous System
3. Cerebrospinal Fluid
4. Convulsive Disorders
5. Degenerative Diseases of the Nervous System
6. Diseases and Injuries of the Spinal Cord and Peripheral Nerves
7. Electroencephalography
8. Head Injuries
9. Infectious and Toxic Diseases of the Nervous System
10. Intracranial Tumors
11. Neuropathology
12. Neuroradiology
13. Syphilis of the Nervous System
14. Treatment
15. Book Reviews
16. Notes and Announcements

In fields which are developing as rapidly as are psychiatry and neurology, it is obviously impossible to abstract *all* the articles published—nor would that be desirable, since some of them are of very limited interest or ephemeral in character. The Editorial Board endeavors to select those which appear to make a substantial contribution to psychiatric and neurologic knowledge and which promise to be of some general interest to the readers of the REVIEW. Some articles, highly specialized in character, or concerning a subject already dealt with in an abstract, may be referred to by title only at the end of the respective sections.

A section entitled INTERNATIONAL RECORD OF PSYCHIATRY AND NEUROLOGY is included at the beginning of the journal. The Record Section consists of advanced clinical and experimental reports.

The Psychiatry and Neurology Newsletter was compiled by Doctors Leon Epstein and Francis N. Waldrop.

The Editorial Board at all times welcomes the suggestions and criticisms of the readers of the REVIEW.

WINFRED OVERHOLSER, M.D.
Editor-in-Chief

QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

Incorporating the International Record of Psychiatry and Neurology

Training and Research in a State Department of Mental Hygiene*

Henry Brill, M.D.

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In the work of a department of mental hygiene, the functions of training and research intertwine closely with those of treatment and prevention. If modern standards of care are to be met in any way and modern methods are to be used, there must be adequate numbers of properly trained personnel. In part because some of the needs are so specialized and because of the general scarcity of technical and professional personnel, it has been necessary to develop a system of in-service teaching supplemented by stipends and other forms of training subsidy for such groups as nurses, nursing instructors, occupational therapists, recreational therapists, social workers, psychologists, psychiatrists, and others. In addition, all ward attendants must be trained after being employed.

Special mention should be made here of the New York state hospital schools of nursing which for many years have supplied the hospitals with registered nurses and carried on a large share of the attendant training. These schools are directly accountable for the favorable patient-nurse ratio that has been maintained and have done much to elevate the level of patient care.

Space forbids a more adequate description of the complete training program but it should be said that it is motivated by the conviction that the expenditure is more than repaid in numbers of patients released, although because of its scope, the cost of the total mental hygiene program remains large.

The total proposed New York state operating budget for 1954-55 is \$434,200,000, of which 28.1 per cent, or \$122,000,000, is for mental hygiene. In addition a \$350,000,000 bond issue has now been called for since previous annual appropriations have been unable to provide sufficient new construction to house the continuously expanding population of our state hospitals and schools. Unless some unforeseen change takes place in the present situation

* Address before the Governors' Conference on Mental Health, Detroit, Mich., February 9, 1954.

we anticipate that the number of patients will continue to increase at the rate of approximately 3,000 each year. In 1930 there were 50,000 patients in mental hygiene institutions, the number is now 112,000 and barring some fortunate and unforeseen change in the present circumstances it will reach 140,000 by 1965, an increase of some 250 per cent in 35 years.

To get the full story it is necessary to remember the social and economic loss attributable to mental disorders outside of mental hospitals.

How often unrecognized and perhaps vague mental attacks account for the breaking up of once good marriages, the unaccountable failure of promising careers, the incomprehensible deviations of judgment and behavior which sometimes occur in persons of the best reputation and integrity, and many other catastrophic, bizarre, and unexpected events in the lives of individuals can only be estimated. Every newspaper which one picks up contains accounts of such cases and the professions which are involved in any form of counseling can testify how numerous such instances actually are. It is to be expected that with the development of comprehensive community psychiatric facilities such as the one now being developed in New York there will be more complete information on this important subject in the future. Meanwhile, how many of the 16,000 suicides which occur annually result from these causes and to what extent delinquency, alcoholism, drug addiction, and criminal sexual deviation represent some variety of mental illness in disguise can only be guessed. To this number may be added certain persons who at given times in life become shy, suspicious, morose, irritable, litigious, a prey to abnormal fears and worries, and a burden to all, particularly to themselves. Illness of this kind may progress only far enough to damage the patient and his family socially and economically; the disorder itself may remain unrecognized and by present methods it may be incapable of positive identification. An aspect which seriously interferes when action becomes necessary in a case.

The situation both in hospitals and in the community can and is being continually improved by more intensive applications of methods already available, but it is generally agreed that even with the best of present technics there is still no fully satisfactory solution of the problem. Under the circumstances it is natural to turn more and more intensively to research, to be preoccupied with the evaluation of its potentialities, its past accomplishments in the field, and the urgency to accelerate the tempo of this important work.

To some extent it is possible to judge the future potential by an examination of what has already been accomplished by psychiatric research and perhaps draw some inferences from this review. A long series of significant advances has taken place during the past 50 years and the pace has been accelerated during the past 20. Syphilitic infections of the central nervous system—once 10 per cent of hospital admissions—have become quite rare as the result of intensive and successful studies and improved treatment. This once malignant disorder can now be prevented or treated with rapid, safe, and painless methods. Mental disorder due to pellagra, a disease of nutrition due to a vitamin lack, formerly common in certain parts of the country has now virtually disappeared. Electric shock therapy has made it possible to relieve depressions, even those of later life, with comparative safety. This same treatment has proved to be valuable in treating the uncontrolled excitements which have caused many fatalities among the mentally ill; the therapy has also had a favorable influence

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on many cases of dementia praecox. Psychoanalysis has had an influence on all phases of psychiatry and has extended far beyond the confines of this work. The understanding of epilepsy, its control by medication and surgery have advanced enormously. The use of the brain wave, definite advances in the understanding of certain forms of mental retardation, the use of psychosurgery, the introduction of social psychiatric technics, and many others still to be listed among recent advances.

On the other hand it must be pointed out that in many directions progress has been quite limited, notably in the treatment of dementia praecox, an illness which accounts for some two thirds of all the hospitalized mentally ill. There is only limited understanding of the mental disorders of the aged, another very large group, and in the field of prevention there is still much to learn.

Compared to the accomplishments registered in other branches of medicine, advance has been slow. Most mental patients cannot expect either the diagnostic assurance or the treatment and prevention now available to persons with such disorders as diabetes, tuberculosis, pneumonia, thyroid disease, and a host of others. Nor can the fact that many of the major advances in these fields have taken place during the last 50 years be overlooked. When one contrasts the treatment results that may be achieved by a country practitioner today with the best that Osler could have done half a century ago, there is some measure of the speed of general medical progress. Psychiatric advance has been important and promising but not nearly so rapid or spectacular. Some of this difference is certainly due to the fact that the problems of psychiatry are in general more difficult to approach scientifically than are those of general medicine.

Such inherent difficulty could well account for part of the relative slowness of psychiatric advance but it is also undeniable that there has not been as much research in this field as elsewhere. Fewer workers have been engaged in the work and the volume has been small. This has been due to the circumstances surrounding psychiatric practice. Psychoses almost without exception cannot be produced in animals; they must be studied in patients and in the past the mentally ill have for the most part been removed from the community and segregated in isolated hospitals under the care of a staff barely sufficient in most cases to care for immediate patient needs. There has been no extensive class of physicians in close contact with psychiatric cases, motivated to study them, and possessed of the necessary facilities and sufficient leisure for such investigations.

In spite of all these unfavorable circumstances, work has been carried forward and there is a long and well established tradition of research in state mental hospitals. The annual reports of the early superintendents, such as Amariah Brigham of New York, Isaac Ray of Maine, and John Galt of Virginia were as much an account of their research as the operation of the hospitals. Much of the psychiatric history of the last 150 years was written in the public mental hospitals of this country and Europe.

The names of those who did important work in public mental hospitals reads like a *Who's Who* of neuropsychiatry and includes such famous men as Pinel, Esquirol, Bayle, Dejerine, Duchenne, Gudden, Alzheimer, Nissl, Pick, Korsakoff, Meynert, Wernicke, Hitzig, Forel, Bleuler, and many others too numerous to mention here. The names of the hospitals are

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less known, but one still recognizes the Salpêtrière and Bicêtre, Charenton, Burgholzli, Worcester State Hospital, and St. Elizabeth's Hospital, not to mention Bellevue and Cook County hospitals and others.

When one considers the circumstances it is surprising to see how much was accomplished, but the fact remains that even more had to be left untouched. To this day the volume of psychiatric research publication is small when compared to the size of the problem; examination of medical indexes which list current publications will show how short the psychiatric section is when compared with others. Sometimes this lack of volume is taken as an indication that the whole subject is sterile, relatively unapproachable, and offers only a few leads which have already been extensively covered.

The list of things which are known and which could be known if there were sufficient facilities and personnel is a long and impressive one. Thousands of brain operations have been done for relief of mental symptoms during the last 10 years; some have been successful and some have failed. A systematic, large-scale, long-term follow-up of these cases throughout life and examination of the brain after death might give some clues as to the reasons for success or failure and perhaps some leads about the nature of the disorder itself, but only the barest beginnings have been made. For years the coming and going of hundreds of thousands at hospital doors has been carefully recorded but there is only very incomplete knowledge of what happens to them after they have returned to the community. A follow-up study would give an accurate measure of the statistical probabilities of the outcome of various illnesses and an exact comparison of the effects of treatment. At the present time one or another procedure makes the outlook better in certain illnesses, but how much better is not known and when proof or an accurate comparison is required it is necessary to delay the answer till some future time when someone has had the opportunity to do the necessary groundwork.

There is only the most general knowledge of how mental disorders are distributed through society, what influence wealth and poverty, opportunity and deprivation, stress and ease may have. Some work on a limited scale is now being undertaken in this important field but the surface has barely been scratched. Evaluation of new technics of psychotherapy, new psychologic procedures and technics remain to be carried out on a broader scale. Meanwhile every new advance in other scientific fields from isotopes and electronics to chemistry and sociology remains to be examined with relation to the central problem. The profusion of new drugs, new chemical procedures and technics, and new instruments and devices offer an unending challenge to those who have an interest in advancing the care of the mentally ill. Public confidence in research as a practical tool to solve technical and scientific problems has been bolstered by spectacular advances during the last 50 years. Research departments have proved themselves to be an essential part of the operation of large commercial and industrial organizations, and it is only natural that an intensification of the research effort to reduce the social and economic costs of mental disease should be attempted.

Multiple indications show that this trend is already well under way. The new program involves laboratories, psychopathic hospitals, outpatient services, correctional services, and state hospitals and schools. The last two still present an undiminished need and oppor-

TRAINING AND RESEARCH IN A STATE DEPARTMENT OF MENTAL HYGIENE

tunity for research which is now being met by establishment of one research facility after another within their walls. Most recently there have been new units at Skillman, N. J., and Galesburg, Ill.

A description of the research pattern as it is developing in the New York State Department of Mental Hygiene may be of interest. The oldest and best known unit is the Psychiatric Institute. This began in 1895 as a pathologic research institute under van Gieson and was opened not long after the state took over responsibility for all the mentally ill in New York. In 1902 Adolph Meyer moved the unit to Manhattan State Hospital on Ward's Island where it remained till 1929 when it was moved to its present quarters in a 20-story teaching and training facility. This is a part of the Columbia-Presbyterian Medical Center and is closely integrated with the Columbia Medical College. Here a large staff of research scientists are engaged in basic as well as clinical research. An extensive and elaborate twin study, a significant contribution to the question of heredity in mental disorder, is centered here as are studies on brain waves, chemistry of the brain tissues, and testing of the action of certain drugs.

More recently activity has been intensified in the state hospitals and schools. In 1945 a unit was established at the Creedmoor State Hospital manned by full time personnel and operating without service functions. This unit has been particularly interested in the glandular secretions as they affect the mental balance. In 1952 another unit under full time research personnel was opened at the Rockland State Hospital. This group has been particularly involved in a better definition of the disease of dementia praecox and has sought to bring a coordination of a number of newly developed statistical and chemical technics. The research activities of the Letchworth Village group have been in progress for a number of years and although operated by personnel which also has service functions, this unit has made consistent and recognized contributions in the field of mental deficiency. At Central Islip State Hospital a similar group of research workers has been investigating the effect of certain drugs on mental symptoms and has also been carrying out some evaluation of certain psychosurgical procedures. Another unit in Manhattan State Hospital is developing under a physician well trained in examination of brain tissue as well as allied technical procedures. Research on a smaller scale is being carried out in almost all the other state hospitals and schools.

Mental health activities which involve several departments are controlled by a Mental Health Commission of which the Commissioner of Mental Hygiene is the chairman. This operates through a formal organization with an executive director and has engaged in research in the field of alcoholism, psychiatric epidemiology, and the epidemiology of mental retardation. The work of this group is directly in the community and in outpatient clinics. Another research group is carrying on a study of convicted sex offenders in Sing Sing Prison under the joint auspices of the Department of Correction and the Department of Mental Hygiene.

In the central office of the department, responsibility for research has been centered in an assistant commissioner, who acts as the central office representative of the various research units, represents them in their dealings with the central agencies, acts as coordinator at the

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same time, and furnishes a channel of information perhaps with an element of interpretation which is sometimes useful in translating the technical language of the research scientist into the no less exacting and technical language of the administrative world. The value of such liaison can be very great, especially when it is necessary to reconcile the non-routine needs of scientific groups with the routine procedures of normal business and personnel management.

The total research budget covering these activities in the department for 1954-55 is \$1,750,000.

Recruitment and training of personnel for research purposes has been one of the most important tasks. An attempt has been made to develop a system in which academic freedom, leisure for reflection, and freedom from service duties will be combined with a stable and reasonably secure economic situation. Emphasis has been on productive work; there are no publication requirements nor is publication forced. Research workers have been encouraged to secure academic recognition and to establish affiliations with various teaching organizations. It has been found necessary to make financial arrangements for disbursements as flexible as possible and to reduce to a minimum the need to anticipate budgetary needs too far in advance.

Experience indicates that there is a strong tendency to enlarge the research function of the hospitals. It is generally agreed that research units stimulate the therapeutic and academic interest of the professional staff and are of great value in training and recruitment as a result. Furthermore, these units soon establish a liaison with medical schools and other teaching centers and supply a basis for cooperative effort with such groups. It must be kept in mind that the research questions to be answered in psychiatry include those which arise in state hospital populations and thus it is of the utmost importance that there be adequate provision for intimate and continued contact between the various research elements and the clinical functions of the state hospitals. Two important factors are of assistance in breaking down the isolation which militated against such contact in the past. Superhighways and modern cars have brought many institutions within an hour's travel from large centers, and in addition the modern tendency to suburban living has placed many research workers within even closer reach. This is aided by the tendency to dispersion of metropolitan facilities.

Recent advances in psychiatry and in research technics have interested young physicians in this field as never before in the past. If they can be recruited in spite of the competition of lucrative private practice, if they can be held in this work and supplied with a field of promotion and with a secure future in research, it should be possible to build a large and productive research organization geared to the needs of the state hospital system. While recognizing fully the importance of individual brilliance and even good fortune in the advance of this work, it is also felt strongly that these flashes occur only against a background of extensive investigation. Such a period of activity now seems well under way in this country. If it is possible to maintain a consistent operation for a period of time, the action of normal factors can be relied upon to supply the necessary decisive findings. The methods are costly, laborious, and at first glance do not seem to resemble the brilliant discoveries usually associated with the word "research," but they are tried and certain and cannot fail to produce results if the effort is put forth.

Psychiatry in Eastern Germany*

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This review of psychiatry in the Deutsche Demokratische Republik, the eastern zone of Germany, is based upon a survey of the professional literature from that area over the past few years and not upon personal observation or contact.

Prior to the Nazi regime, German psychiatry had remained predominantly under the influence of the organic and nosologic point of view, with psychodynamic approaches never achieving more than secondary status. Under the Nazis psychiatry was, because of its sociologic and philosophic implications, prey to interference by the government as was no other medical specialty. Psychoanalysis was almost completely suppressed because of its individualistic emphasis and anti-authoritarian orientation. As a result many psychiatrists emigrated. After the start of World War II, the Nazis secretly ordered the extermination of the mentally ill, considering them a social liability and a genetic menace. Lindenbergs¹³ reports that at least 250,000 patients perished in this program. In the Soviet zone the invading armies are said to have found only 6,000 neglected, starved, senile patients in the 35 mental institutions with a bed capacity of 30,000. This reduction of psychiatric inpatients reflected in part the diversion of facilities to wartime uses, but was also clearly the result of the extermination program. Hospital staffs, largely dispersed, were under grave suspicion for their part in the extermination activities.

The immediate problems of reorganizing a service for mentally ill patients were enormous and left little opportunity for scientific research and publication. This may explain why the mental health services were not able to start a regular journal until early in 1949, four years after the end of the war.

As a successor to the *Monatschrift für Psychiatrie und Neurologie*, published abroad after it was banned in Germany by the Nazis, *Psychiatrie, Neurologie, und Medizinische Psychologie* began publication in January, 1949, at the invitation of the Soviet occupation power. In the posthumous introduction, Karl Bonhoeffer,³ the distinguished editor of the *Monatschrift*, saw as the new journal's larger aim that it should "cultivate scientific relations with the other zones . . . again establish the connection which in former times was a matter of course." He expressed the hope that it would "afford room to the neighboring fields . . . call the attention of the neurologist to the social aspects of medicine." He makes the interesting comment that "any possibility of removing psychotherapy from its isolated position and linking it with the neighboring fields of medicine should be welcomed." He admitted that "German psychiatry suffered a heavy loss at home as well as abroad . . . it will require time and great exertion to restore the confidence of the population and the respect which the German neurologist enjoyed prior to 1933 with regard to his scientific and humanitarian position." Significantly, these dedicatory remarks were published with

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French, English, and Russian translations, as were the summaries of articles in the journal for the first two years. Since 1951 the articles have been summarized only in Russian.

The selection of the editorial board, comprising some of the most prominent psychiatrists in eastern and western Germany, is consistent with the promising statement of Bonhoeffer, Schultz-Henke of Berlin, Ewald of Goettingen, K. Schneider of Heidelberg, and W. Wagner of Munich, as well as W. Kemper of Rio de Janeiro. The evidence, however, would ascribe to them an honorary rather than an active role in the direction of the new journal. Wagner's name was dropped without explanation after March, 1953. In 1953 also, only a perfunctory notice announced the death of Schultz-Henke. The apparent responsibility for the content and direction of the journal lies with the editor, Alexander Mette, a neuropsychiatrist on the faculty of the University of Jena, and a functionary in the Volkskammer with many other official government connections. Born in 1897, he received his medical degree at the University of Halle in 1928.³⁴ In the *International Journal of Psychoanalysis* of 1937 he is listed as a full member of the German Psychoanalytic Society.

Mette, in his function of transmitting the official point of view, has consistently emphasized the effects of economic conditions upon mental health as opposed to the importance of individual childhood experience.¹⁹ He has prepared statements celebrating German-Soviet friendship,¹⁷ the World Youth Congress in Berlin,¹⁶ etc. At the time of Stalin's death, the journal carried obituaries and political manifestos more suitable for the daily press than a professional journal. The leading article by a J. Matern, state secretary,¹⁵ entitled "Stalin is Immortal," closely resembles a similar piece in the *Chinese Medical Journal*,³¹ not only in the ideas formulated but in actual phrasing.

It has been interesting to note that prior to his death, Stalin was mentioned in many articles and in all those dealing with psychiatric theory, but since his death there is no mention of "the greatest man of our era." In the section of the journal which we might know as "Notes and Comments," purely political events are often reported, consistently picturing the Soviet Union as the champion of peace. Before July, 1952, a few articles from the western literature were abstracted. The only American contribution to be reprinted was Wexberg's article on "Mental Health and Nutrition in Old Age."³⁵ Even the bibliographies of articles rarely refer to the French or Anglo-American literature, and then usually not to current publications.

During the five years of publication increasing conformity of opinion is apparent, although some diversities and inconsistencies continue to be present. In the early issues of the journal, two controversies were printed. The issues at stake were perhaps of less interest than the fact that the controversies were allowed to be voiced. It seems that in an article for one of the popular magazines, Müller-Hegemann, a frequent contributor, who has since become a co-editor of the journal, had attacked psychoanalysis on the grounds that relatively little becomes conscious, that analytic patients are nonproductive social parasites, lazily reclining on couches, and that sex is overemphasized. Schultz-Henke wrote an open letter³⁰ to the journal vigorously refuting this critique. He even dared to question the assertion that neurotics do not exist in the USSR. Müller-Hegemann rebutted in another letter re-emphasizing that the "social milieu is of greater importance" than personal experi-

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ence. In the second controversy the following year, Destunis,¹ another co-editor, contributed a deviant article published with the telling footnote: "The view of the editor does not conform with all the points of the conceptions here developed by the author; these might stimulate a reply." In this article a biodynamic frame-work is developed with special reference to Freud, F. Alexander, J. J. Masserman, and other exponents of psychoanalytic thought. Müller-Hegemann²² responded to the invitation to reply with an attack on psychoanalysis, and by distorting Destunis' position into a gross biologic approach.

The editor, Mette, wrote the first article emphasizing the importance of Pavlov and the necessity of orienting German psychiatry to a full appreciation of his contribution to psychiatry.²⁰ In his review of nineteenth and twentieth century psychiatry¹⁸ from the standpoint of dialectic materialism, he contrasts Pavlov favorably with Freud who, he claims, "despite a revolutionary gesture, favored bourgeois class interests." One wonders what is the background for this sudden preoccupation with Pavlov, particularly in the subsequent articles on theory. During 1949, Pavlov is hardly mentioned, while by 1953, more than a quarter of the articles dealt with "the precious heritage" of the renowned physiologist. This interest is clearly and frankly linked with developments in Russian psychiatry. During the 1940's, the anti-Pavlovian orientation of Rubinschtein, recipient of the Stalin prize in 1942, was the official psychologic and psychiatric line. In 1947, however, Rubinschtein came under attack. According to London,¹⁴ the Pavlovian emphasis gradually increased until 1950 when the USSR Academy of Medical Sciences held a Pavlovian session to celebrate Pavlov's hundredth birthday. Here, Bykov and Ivano-Smolenskii, students and followers of Pavlov, were appointed to direct the Pavlovian renaissance. At first, it seems, the response was weak and superficial, for Pravda urged in 1951 that there should be more than a mere "chatter of Pavlovianism." The response to this was prompt. Mette echoed with his complaints about the neglect of Pavlov's "towering discoveries,"²⁰ followed by the translated Resolution of the Russian Pavlov Session,²⁷ which ends with the call of S. I. Vavilov, President of the Academy of Sciences: "Long live the Leader of the Soviet People, the inspired spokesman of its will and hope, the great Stalin!" In early 1952 and 1953 the East Germans conducted their own Pavlov Sessions. As in the Russian model these were celebrated by self-recriminations for past negligence in fully appreciating the value of Pavlov and the fostering of his ideas.

Following this, there hardly appeared an article in the journal which did not attempt to relate itself in some way to the Pavlovian point of view. He was called upon, according to a translated Russian article, to "strengthen the foundations for the Marxist-Leninist reflection theory."²⁵ The conditioned reflex, the physiologic approach to nervous and ultimately to psychic activity, is cited to prove a complete mind-body unity supporting the materialistic conception of man and contradicting "bourgeois idealism." The conditioned reflex theory, obviously limited, is expanded by heavy emphasis on Pavlov's theory of the second signal system. This stresses the importance of cerebro-cortical activity in man, the effects of symbols on body organs as well as on behavior. Pavlov's hypothesis of an "investigative reflex" elicited by novel situations, is adduced to explain the expanding understanding and behavior of the developing child. With this stress on the cortex, man

is considered as primarily rational and as completely responsible. The channelization of reflexes is stable but not immutable, making therapeutic intervention possible. Personality can be changed, illness cured, by a "re-education of the reflexes." Pavlov's collected works and, since August, 1953, the *Pawlows-Zeitschrift für höhere Nerventätigkeit*, exclusively a translation of a Russian journal, are being published in East Germany.

The scientific contributions to the journal reveal a somewhat greater latitude than the "official" portion of *Psychiatrie, Neurologie und Medizinische Psychologie*. Only the psychiatric articles, which comprise over half of the journal's contents, will be reviewed here. The articles dealing with physical therapies of psychiatric disorders are of interest because, on the whole, there appears to be a lack of expressed enthusiasm for these in favor of some type of psychotherapy and manipulation of the environment. Prior to the ban on pre-frontal lobotomy throughout the Soviet orbit, Ritter²⁸ reported the results on 11 cases; of these 2 died due to the operation, 1 of which had a congenital vascular anomaly, 3 were unimproved, 5 improved requiring further hospitalization, and 1 could be returned home though on an invalid status. The author considers leukotomy a purely symptomatic treatment. Salm²⁹ recommends the use of ambulatory outpatient electroshock therapy on the basis of 625 treatments given to 93 patients; he emphasizes the advantages of having the patient remain in his usual family environment.

Several recent articles on narcoanalysis express lack of enthusiasm; this seems to be largely based on a reluctance to deal with unconscious material combined with a skepticism about the validity of the information obtained. According to Jacob,⁹ narcoanalysis had proved of limited value in the differential diagnosis between neurosis and psychosis and in acute, reactive emotional disturbances. Rather loosely, he states that "as a psychoanalytic procedure" it brings out "repressed material." Kleinsorge¹⁰ reports an experimental study of 21 subjects showing the effect of emotions aroused during hypnosis on a variety of blood values in a psychosomatic study. In a later contribution¹¹ the same author states that psychiatric illness is an increasing problem, possibly a dangerous statement because of its reflection on the success of the new society. He also suggests the use of psychotherapeutic methods to those practicing internal medicine.

In a substantial, statistical contribution, Feudell⁸ gives the epicrisis of 700 suicid attempts. On the basis of the statistical analysis of the age and sex distribution, and separation of the war and post-war periods, he goes so far as to state that personality structure appears to be more important than social factors in the causation of suicide. He detected evidence of true psychosis in only 10 per cent of the cases. In struggling with the problem of psychiatric nosology, Lemke¹² represents the organic point of view, asserting that "the differentiation of exogenous and endogenous psychoses is only theoretic and preliminary" because the organic basis of schizophrenia has been hidden by "insufficient knowledge and unsatisfactory diagnostic methods." The Vogts³³ continue to search for the pathologic changes of the "functional" psychoses in the corpus striatum and reject the "many absurd interpretations of some 'psychoanalysts'." The views expressed in the predominantly clinical papers are definitely against the main current and are cited as interesting evidence of the limited diversity of opinion which is still allowed to find expression. Bendrat² in a

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theoretic article on psychopathy claims a new emphasis on exogenous factors in character development as opposed to concepts of constitution. Reifenberg²⁶ of the University of Tübingen in the western zone, reports significant improvement with the use of ascorbic acid in the case of an obsessional neurotic with dysphagia. The mechanism of the neurotic disturbance is postulated to be the pathologic conditioned reflex. A translation of a contribution from the Institute for Obstetrics and Gynecology at the Ministry of Health of the USSR²⁷ attempts to apply Pavlov's teaching to obstetric problems. After a review of his theories, the author offers the verbal suggestion that, "the typical conditioned reflex of man," should be valuable in dealing with labor pain and recommends research to clinicians.

In the last two years, almost a quarter of the psychiatric contributions have dealt with the problems of children. Geisler⁷ discusses suicide in children in an interesting clinical report on 4 cases, aged 8 to 13, with histories of suicidal attempts and prolonged suicidal preoccupations. She also published a case of anorexia nervosa⁸ which she associated with the fear of maturity which is, however, not considered causative; childhood traumas are factors designated as contributing to constitutional predisposition and "diencephalic weakness." Grage⁹ asserts that childhood schizophrenia is diagnosed too frequently. A theoretic interest in juvenile delinquency seems to have been stimulated by the 1950 translation into German of Makarenko's *Der Weg ins Leben*, an account of his collective work therapy with juvenile delinquents in a Russian institution during the 1920's. Barthel's "Diagnosis and Treatment of Langdon-Down Disease" proved puzzling until she explained that the English physician, Langdon-Down first differentiated Mongolian idiocy in 1866, choosing the name "Mongolian" because of the obvious facial characteristics rather than any intended ethnologic slur. "This inappropriate designation has acceded to Langdon-Down's disease at the present time," she wryly comments. The intellectual impairment is ascribed to disturbed attention; she recommends therapeutically active pressure from the environment and special use of the mother-child relationship.

Müller-Hegemann is a unique phenomenon in his scholarly endeavors to promulgate the new point of view in prolific contributions to the professional literature. His articles in the journal are enthusiastic in the theoretic discussion of Pavlovian teaching, consistently and increasingly anti-psychoanalytic, but his interests scan a broad horizon. In dealing with the relationship of psychopathology to literature,²⁴ he finds American literature "flooded by works in which released instincts represent the theme," aiming to prepare "the broadest masses for every kind of aggression.". Besides his articles for the journal, he has written a monograph *Die Psychotherapie bei schizophrenen Prozessen*,²⁵ the only important indigenous psychiatric volume which has appeared in the eastern zone since the war. In it he continues his polemics against psychoanalysis. This work is unusual in that reference is made to the contemporary western literature, devoting a section to the psychoanalytic concept of schizophrenia as presented in Fenichel's *The Psychoanalytic Theory of Neurosis*. He attacks Freud for "biologizing psychology and psychologizing history." Somewhat reluctantly he admits unconscious processes, but he considers "the unconscious neither a separate nor an influential power in man." Consciousness plays the decisive role in the conduct of life. He, of course, also refers heavily to Pavlov's work. He discounts the im-

portance of heredity and constitution and stresses the significance of social factors upon the personality referring to economic rather than broader cultural forces. He speaks of interpersonal processes but in his theoretic portion minimizes the importance of family relationships and infantile experience.

The presentation of 4 cases of schizophrenia reveals that the author's clinical activities deviate from his theoretic position. Economic factors are not really worked out as of decisive importance but relevant family relationships are described in considerable detail. Despite his theoretic emphasis on psychotherapy, electric convulsive therapy was used in 3 of the cases. Psychotherapy was conducted with daily interviews lasting for one hour. While he gave some attention to the history, the focus seems to have been placed on current problems which were discussed in a reasoning, though accepting, non-moralizing manner. Free association was rejected for doctrinaire reasons, not as unsuitable for working with schizophrenics. While dreams were not actively encouraged, several are reported and analyzed largely at the level of the manifest content. There are only a few references to the transference phenomenon and none indicating any awareness of the countertransference. He dismisses what appears to have been his inept handling of the analytic material, ascribing the worsening of a patient's condition to the arousing of pathologic memories brought about as a result of psychotherapy. He used electroshock as a method of "sponging away the remembered material." He proposes that treatment should be "collective work therapy," an opportunity for the patient to solve his social isolation in a group under psychiatric supervision. Work therapy, not used in any of the reported cases, should teach the patient to conceive of work not as a depressive burden, but as "the most valued, precious, social function."

SUMMARY

In summary it can be stated that psychiatry in eastern Germany has undergone marked changes under the political pressure of the Russian occupation and of a new social philosophy. East Germany has been markedly and increasingly separated from the other zones and from the West. A few books from western Germany and Switzerland are being reviewed in the East German journal, but none from French or Anglo-American literature. Under the pressures of control and shifting approval of theoretic positions, few books are being published in the eastern zone and the greatest number of these are translations from the Russian.

Hereditary determinism, strong under the Nazis and long before in Germany, is superseded. As in the West, great emphasis is now placed on the importance of environmental factors which, however, are understood quite differently. In the East German concept, these factors are largely thought of as economic, as incident to the class struggle, and much energy is expended in rejecting the broader view of the importance of early individual experiences with significant adults and the many-faceted aspects of the culture.

Concurrent with increasing political control and closer dependence on the Soviet, Pavlov has been propelled onto center stage. With this physiologic orientation, East German psychiatry has been further anchored in a biologic approach which theoreticians strain to

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reconcile with the requested emphasis on socio-economic factors. Possible links between the conditioned reflex, Watson's behaviorism or Freud's hypothesis of the repetition-compulsion are specifically rejected. The strenuous emphasis on the dominance of the conscious and on reason widens the assumed gulf between the ill and the healthy and excludes any dynamic conception of human personality. Pavlov's work is strenuously used to support the political philosophy of the regime as heredity was made to serve the Nazi racist theories. Much of the theoretic material is imported in translation from the Russians giving Germany scientific satellite status.

Therapeutically, the move is away from physical measures, with prefrontal lobotomy legally forbidden. Psychotherapy is emphasized, but it is understood quite differently from the western conception. It is not oriented toward individual insight and personal maturation, but aims rather exclusively to adjust the individual to the social demands and to lead him towards greater economic productivity. The basic attitude towards therapy still remains authoritarian and manipulative of the patient as it had tended to be in Germany during the past.

Complete consistency in the theoretic frame-work or complete uniformity of thought does not yet prevail, but the limited opportunities for expressing diverse opinions have decreased during the last four years. There is considerable evidence of tightening control and an increasingly limited horizon. The traffic of ideas in the psychiatric relationship with Russia appears to be a one-way street. As contacts with the western scientific world have diminished the reliance on Russia has increased.

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ABSTRACTS

psychiatry

ADMINISTRATIVE PSYCHIATRY AND LEGAL ASPECTS OF PSYCHIATRY

For Reference

1. *Some Psychiatric Observations of Correctional Work.* ROBERT M. DORN. *Federal Probation* 18:26-33, September 1954.

ALCOHOLISM AND DRUG ADDICTION

2. *Dangerous Cardiac Effects of Tetraethylthiuram Disulfide (Antabuse) Therapy in Alcoholism.* EDWARD S. MCCABE AND WILLIAM W. WILSON, Philadelphia, Pa. *Arch. Int. Med.* 94:259-263, August 1954.

Twenty patients on disulfiram therapy for alcoholism were first studied exhaustively from a cardiac standpoint. At certain intervals, notably six and 16 days after onset of disulfiram therapy, the patients were tested with alcohol. Before, during, and after these tests electrocardiograms were taken for comparison. These records showed evidence that latent cardiac abnormalities, particularly coronary insufficiency, could be caused by disulfiram. Alcohol reaction, and caution concerning the indiscriminate administration of disulfiram to cardiac patients are emphasized. 8 references. 2 figures.—*Author's abstract.*

3. *Use of Chlorpromazine in Chronic Alcoholics.* JAMES F. CUMMINS AND DALE G. FRIEND, Boston, Mass. *Am. J. M. Sc.* 227:561-564, May 1954.

Chlorpromazine was administered to 60 alcoholics, in conjunction with disulfiram, in order to study its effectiveness in controlling (1) the nausea and vomiting of the alcohol-disulfiram reaction, and (2) the psychomotor agitation following inebriation and withdrawal procedures.

Irrespective of the quantity of alcohol consumed, patients received concomitantly by mouth 100 mg. chlorpromazine and 500 mg. disulfiram. Twenty-four hours later they received 500 mg. disulfiram and 50 mg. chlorpromazine; 48 hours after initial therapy, 500 mg. disulfiram and 25 mg. chlorpromazine, and, thereafter, for one week, 500 mg. disulfiram. Chlorpromazine was given only if vomiting occurred. Patients were observed for 24 to

48 hours on the emergency ward; since no untoward effects were noted, they were sent home with a responsible person who had been carefully taught the medication schedule.

Chlorpromazine suppressed the nausea and vomiting and prevented post-alcoholic agitation. Within an hour patients became drowsy and calm; some fell asleep, usually for 10 to 12 hours. Within 24 hours patients were hungry and able to take solid foods. In several instances they could return to work after 72 hours.

For Reference

4. *A Six-Year Follow-Up of a Series of Committed Alcoholics.* JOHN COWEN, Raleigh, N. C. Quart. J. Stud. on Alcohol 15:413-423, September 1954.
10 references. 2 tables.—Author's abstract.

BIOCHEMICAL, ENDOCRINOLOGIC AND METABOLIC ASPECTS

5. *Physiologic Anatomy of Schizophrenic States.* J. LHERMITTE. Encéphale 43:97-120 no. 2, 1954.

A review of the literature shows the clinical picture of dementia praecox may be produced by different pathologic processes. Studies are needed to discover genetic, clinical, and biologic characteristics of various types of dementia praecox. In the future an attempt must be made not to confuse predetermination with predisposition to dementia praecox. Several authorities describing lesions of the brain in dementia praecox agree that the cortical lesions are not diffused but located in certain layers of the prefrontal lobe and the association areas of Flechsig. Naito states that areas 10, 45, and 47 are involved but not areas 8, 9, and 44. The pathologic anatomy of dementia praecox has not yet been definitely determined.

The report of the Congress of Histopathologists of the Nervous System in Rome, 1952, is discussed. In many cases the lesions cannot be considered as specific. In some cases dementia praecox appears to be an encephalosis, in others an encephalitis. The special clinical and biologic character of these two types needs to be delineated. Dementia praecox may be of various etiology, thus some cases are due to chronic lesions of the meninges and vascular system and others are due to acute or subacute inflammatory changes. Peters likewise admits the diverse origin of schizophrenia, which is described as only a type of reaction to exogenous factors. Not only the type of the lesions but also their site may differ. Vito Longo does not agree with Peters that some of the cerebral changes noted in dementia praecox are occasionally found in normal subjects.

Besides the idiopathic dementia praecox there are also symptomatic schizophrenic syndromes, some due to encephalitic processes, others to endogenous or exogenous intoxications. Attention is drawn to disparity of postmortem and neurosurgical observations. While neurosurgery and shock therapy may have a curative effect, they also change the structure of the brain thus endangering the future of histologic study of the psychoses.

Attention is drawn to the extracerebral lesions in dementia praecox, such as diffuse or localized atrophy of the cerebellum, and lesions of the spinal cord and vegetative system.

5 references.

CLINICAL PSYCHIATRY

6. *The Dream.* W. T. WINKLER, Universitäts-Nervenklinik Tübingen. *Fortschr. der Neurol. u. Psychiatrie* 22:227, June 1954.

Stressing the need for a critical review of recent literature dealing with the scientific significance of dreams, the author presents a survey of the most important recent contributions in this field with reference also to a few of the older well known theories. For a more complete discussion, the reader is referred to the recent book by W. von Siebenthal, "Die Wissenschaft von Traum," (Julius Springer) Berlin, 1953 which has a list of 1,309 references. Following a review of the phenomenology of dreams under such headings as dream actuality, sensory involvement, catathymia, pathic passivity in dreams, and the sense of space and time in dreams, attention is directed to their special interpretation—as dependence upon bodily stimuli, as a mirror of waking experience, as the result of regression, as more or less successful wish fulfillment. Dreams are also considered as autosymbolic demonstrations of inner psychologic processes, as compensatory mechanisms, and as a mirror of prospective tendencies. All these various aspects are propounded by numerous writers from many different points of view. The confusing picture is in need of clarification, which can only be gained by considering them individually and in their relations to each other. 194 references.

7. *Clinical Significance of the Photomyoclonic Response in Psychiatric Patients.* CHARLES SHAGASS, Montreal, Canada. *EEG & Clin. Neurophysiol.* 6:445-453, August 1954.

In some individuals, intermittent photic stimulation produces muscular jerking affecting facial muscles principally and associated in EEG tracing with "frontal polyspikes," which probably are of palpebral origin. This is called the photomyoclonic response. The present study was carried out to determine the clinical correlates of this response in psychiatric patients. Light stimulation alone, i.e. without metrazol, was used. A group of 411 psychiatric patients and a control group of 30 non-patient subjects were studied.

Photomyoclonic responses were observed in 20.2 per cent of the patients and in 10 per cent of the controls. The difference was not significant. There was no significant relationship between age and incidence of response. Responses occurred about twice as often in female as in male subjects. Patients with photomyoclonic responses more often had abnormalities in the routine EEG. There was no correlation between incidence of responses and psychiatric diagnosis. The most significant clinical correlates of the responses could be designated as "history of deviant cerebral excitability." Under this term, the following findings were included: personal and family history of "spontaneous" seizures, seizures with insulin, recent electroconvulsive therapy, recent barbiturate coma, barbiturate addiction and intoxication. These history findings were all more frequent in patients with a photomyoclonic response.

Another finding was that the greater the degree of bodily involvement in the response, the higher the incidence of a history of deviant cerebral excitability. Thus, where response involved the entire body, the percentage of positive history findings was much greater than when only eyelids were involved.

It was concluded that the photomyoclonic response may be regarded as a physiologic sign of deviant cerebral excitability. This study provided no evidence in favor of any specific psychiatric significance of response. It supported the concept that response is a neurologic sign. 12 references. 2 figures. 4 tables.

8. *The Physician's Responsibility in the Prevention of Suicides.* A. E. BENNETT, Berkeley, Calif. Dis. Nerv. System 15:207-210, July 1954.

Both the medical profession and the public tend to overlook the importance of suicide. National statistics show suicide as the ninth cause of death. California ranks about 7 per cent above the national average. Few statistics concern the number of suicidal attempts. Physicians can do much to prevent suicide by proper care of suicidal emergencies and by detecting suicidal risks.

In history taking, common signs of suicidal intentions are: mention of rather abrupt emotional changes; physical symptomatology without organic basis; symptoms of insomnia or anorexia, and loss of interest or drive, often without frank admission of despondency. Psychologic tests like the Rorschach help to assay the presence and depth of depression, but psychiatric consultation may be necessary.

The proper management depends upon the depth and degree of depression and the differentiation between more benign and malignant forms. Outpatient or office therapy usually suffices if the patient does not feel overly hopeless and has made no definite threat or overt attempt. In more malignant cases, the depression is deep, the patient has expressed thoughts of suicide, inflicted minor injuries upon himself, or made attempts at suicide. The physician unable to evaluate the case adequately should advise psychiatric help and see that it is obtained.

Modern treatment of depression has attained considerable success. If the patient does not respond to psychotherapy or if suicidal hazards increase, he must be hospitalized. Administration of electroshock therapy and a full psychiatric regime, with follow-up treatment, is usually successful. In the case of suicidal attempts, definitive psychiatric treatment should follow the symptomatic treatment of the injury. Because the use of barbiturates is common, hospital emergency treatment must include the handling of barbiturate coma.

In an illustrative case, a man of 53, after receiving emergency treatment of barbiturate coma, was treated for a month in the psychiatric ward of a general hospital with electroshock treatment and subsequent psychotherapy. He gradually improved, was then able to obtain suitable work, and two years later showed no signs of relapse. He had become increasingly depressed and attempted suicide after he had lost a good position and was unable to find satisfactory work.

The author recommends education of both professional persons and laity in means of prevention, especially in early detection of suicide, organization of helpful lay groups, instruction of police in handling suicide attempts and of hospital personnel in providing psychiatric follow-up care, and registration of suicidal attempts and research on case records. 4 references.—*Author's abstract.*

9. *The Relationship of Certain Personality Factors to Prognosis in Psychotherapy.* SELIG ROSENBERG, Brooklyn, N. Y. J. Clin. Psychol. 10:341-345, October 1954.

Are certain personality factors of pretreatment psychoneurotics associated with their subsequent improvement or lack of improvement in psychotherapy? How effective are significant factors which were found to predict the course of psychotherapy?

These questions were probed in a study of 40 white psychoneurotic male veterans of World War II, aged 25 to 35, all of whom had undergone pretreatment psychologic testing. Half of this group was definitely improved and the other half definitely unimproved after nine months of individual psychotherapy. The criterion for improvement was the judgment of the individual treatment psychiatrist, supplemented by a check sheet which required specific evidence to justify the therapist's judgment.

The total sample population was randomly split into two equal groups, A and B. The A group was used for the investigation of the personality factors. The B group was used to test the efficacy of the conclusions reached from the study of A group.

The basic materials of the study consisted of the pretreatment protocols of the Wechsler-Bellevue intelligence scale, the Rorschach, a sentence completion test, and rating scales prepared by the investigator for 23 personality factors. Two expert judges independently utilized the test protocols of the A group to make qualitative judgments which they translated to the rating scales. Those variables which were found to be significantly different in the improved and unimproved cases were used by the judges as the sole guide in making predictions of improvement or unimprovement from the pretreatment test protocols of the B group.

The significant findings from the A group indicated that, when compared with the unimproved cases, the improved cases had higher IQ scores, greater productivity, less rigidity, a greater range of interests, greater emotional depth, more sensitivity, a higher energy level, and less concern with bodily symptoms. Using these factors as prognostic guides, the judges were able to make significantly better than chance predictions of improvement and unimprovement in the B group.

The results established the basic hypothesis that certain personality factors are definitely associated with progress in psychotherapy with neurotics and that it is possible to make accurate prognostic statements if these factors are utilized as a guide. 9 references.—*Author's abstract.*

10. *A Preliminary Study of Postshock Amnesia by Amytal Interview.* SAMUEL BOGOCH, Boston, Mass. Am. J. Psychiat. 111:108-111, August 1954.

The author has investigated the nature of the amnestic syndrome associated with electroconvulsive therapy, and its relation to clinical improvement. This study of 21 patients demonstrates the value of interview (with and without sodium amyta). It indicates that at least some of the postshock memory loss is frequently relieved during amyta interview. Of the 21 cases, 14 were diagnosed as schizophrenia; 4, manic-depressive psychosis; 1, involutional melancholia; and 1, "endogenous depression." All had suffered memory loss during or following a course of electric convulsive therapy given for an acute psychotic epi-

sode; before the interview, each patient had received an average of nine shock treatments, usually given on a three per week schedule.

Before receiving amyntal each patient was interviewed for one hour, during which an attempt was made to delineate a few definite areas of amnesia, rather than its exact extent. Inquiry concerned only specific issues about which precise knowledge would be expected. If the patient could not recall five or six specific items, 0.5 Gm. of sodium amyntal was administered intravenously over a period of 5 to 15 minutes. Questioning was then repeated for another hour on the items previously established as forgotten. The patient was seen again within 24 hours to determine how much of the interview had been retained.

Results showed definite improvement in recall in 17 cases. In the 4 where no improvement was observed, it was felt that the acute psychotic state which was still present despite the electric convulsive therapy had been responsible. In 2 of the cases showing improvement some items at first apparently forgotten were remembered upon repeated questioning without amyntal. However, more was recalled in the amyntal interview which followed. Eight patients made the distinction (while under amyntal) between inability to verbalize and inability to remember. Certain events remembered before amyntal were not reported because of vagueness or fears associated with them. In only 5 of the 17 cases were all of the items established as forgotten in the pre-amyntal interview completely recalled during the amyntal interview. In the other 12, between 50 and 90 per cent of the items established as forgotten were recalled during the amyntal interview. All were able to retain the material recalled under amyntal for at least 24 hours.

These observations point to the necessity for a reappraisal of "postshock amnesia." This syndrome appears to be a complex situation in which: (1) The patient remembers, but does not verbalize certain things. (2) The patient has truly forgotten certain things. (3) At least some of the true amnesia is reversible. The author suggests that recall with the technic described might solidify recovery, as well as shorten the period of hospitalization. 9 references.—*Author's abstract.*

For Reference

11. *Factors Involved in Drug-Produced Model Psychoses.* ROLAND FISCHER, Saskatchewan, Canada. *J. Ment. Sc.* 100:623-631, July 1954.
49 references. 1 figure.—*Author's abstract.*

PSYCHIATRY OF CHILDHOOD

For Reference

12. *Childhood Schizophrenia.* *Round Table,* 1953. HERBERT H. HERSKOVITZ, Devon, Pa. *Am. J. Orthopsychiat.* 24:484-486, July 1954.

PSYCHIATRY AND GENERAL MEDICINE

13. *Functional Illness—Medical Enigma.* ROBERT J. NEEDLES, St. Petersburg, Fla. *J.A.M.A.* 156:585-589, October 9, 1954.

Too many persons today tend to blame physicians for failure to cure emotionally ill persons. We should emphasize that the fault does not lie entirely with us and not assume

the blame for failing to cure such people. Instead we should point out that the trouble may be with society, with man's conversion into a modern wanderer uprooted from his past, his old assurances and prejudices washed away and not replaced by new solidity. By asserting the fundamental nature of the problem, we can aid in eliminating this modern pestilence. 6 references.—Author's abstract.

PSYCHIATRIC NURSING, SOCIAL WORK AND MENTAL HYGIENE

14. *Techniques in the Vocational Rehabilitation of Chronically Unemployed Psychiatric Patients.* IAN STEVENSON AND THAIS MORRIS FISHER, New Orleans, La. Am. J. Psychiat. 111:289-300, October 1954.

An approach to the problem of vocational rehabilitation of chronically unemployed psychiatric patients was described. The therapists, consisting of a psychiatrist and a psychiatric social worker, collaborated as a team on 25 cases. The result of their efforts showed that 20 of the 25 patients under treatment returned to work and have remained steadily at work for a period of six months or longer. An encouraging factor in this study is the small amount of time which was required to rehabilitate the patients; the number of interviews being approximately 10 before a return to work had been achieved.

It is significant that the diagnostic category as well as age, duration of illness, and duration of unemployment did not influence the results. And although it was evident that lack of education and special training, lack of supportive family relationships, and excessive dependency presented certain handicaps, these were not insuperable obstacles to rehabilitation.

The authors found that the following were significant factors or helpful technics in the successful cases:

- (1) The preliminary clarification of the patients' physical condition with appropriate treatment or reassurance and explanations.
- (2) An adequate working through of the primary psychologic problems.
- (3) The deliberate focusing of discussions on the topic of employment.
- (4) Generous support and reassurance from the psychiatric social worker during the period of return to work.
- (5) An increase of economic pressure by planned termination of public assistance.
- (6) The focusing of attention on selection of jobs suitable to the patients' psychologic needs.
- (7) A continuous therapist-patient relationship. 6 references. 2 tables.—Author's abstract.

PSYCHOLOGIC METHODS

15. *Diagnosis of Cerebral Disease by Psychologic Methods (Diagnostic des maladies cérébrales par les méthodes psychologiques).* ARTHUR L. BENTON, State University of Iowa, Iowa City, Ia. Encéphale 43:54-72, no. 1, 1954.

In the case reported, the patient was a 9 year old boy, who had shown some emotional instability in early childhood, which had become progressively more marked. He had had

difficulty in his school work for the past year but the only physical symptom, tremor in the upper extremities, had been noted only in the past two months, associated with some muscular tension. The lower extremities were not affected. A psychologic examination, especially the Binet and visual retention tests, indicated that his behavior and learning difficulties were organic rather than psychogenic. This was later confirmed by the development of epileptic attacks and by encephalographic studies which showed the presence of a tumor in the region of the left parietal lobe. This diagnosis was confirmed at operation; the tumor proved to be a hemangioblastoma. The child died several months after operation without showing any improvement. The interest of this case is that the psychologic tests indicated the presence of an organic lesion of the brain, before this was indicated by the neurologic examination. Psychologic tests are not yet so perfected that such a diagnosis can always be made by their use, but their possible value in this respect deserves recognition in neurology. 10 references. 3 figures.

16. *Relationship between Rorschach Determinants and Psychosis in Barbiturate Withdrawal Syndrome.* CONAN KORNETSKY, Bethesda, Md. Arch. Neurol. & Psychiat. 72:452-454, October 1954.

A Rorschach test was administered to 14 barbiturate addicts several months after they had recovered from the syndrome following the abrupt withdrawal of barbiturates. The withdrawal syndrome consisted of a severe transitory psychosis in 8 patients and no psychosis or mild psychosis in 6 patients. The subjects who became grossly psychotic during withdrawal made less use of color and human fantasy (sum C + M) percepts at a statistically significant level than those subjects who experienced no psychosis or in whom psychosis was mild. These data suggest that persons who do not utilize either affective expressions or active fantasy in life situations do not have the resources to cope with the tensions associated with extreme stress of this type. 6 references. 1 table.—Author's abstract.

PSYCHOPATHOLOGY

17. *Schizophrenia: A Regressive Process of Adaptation.* ROLAND FISCHER, Saskatchewan, Canada. J. Nerv. & Ment. Dis. 119:492-497, June 1954.

A working hypothesis is advanced, according to which schizophrenia is regarded as a process of regressive adaptation.

Attention is called to the fact that some of the symptoms belonging to the general adaptation syndrome of Selye are also present during certain stages of the schizophrenic process. At the peak of catatonic stupor there is a prevalence of: high protein catabolism, raised uric acid excretion, reversible liver damage (of the fatty infiltration type), low hippuric acid excretion (after ingestion of sodium benzoate), lowered content of reduced blood glutathione, lowered sedimentation rate of erythrocytes, lowered blood clotting time, acidosis, hypochloremia, slightly reduced glucose-tolerance, hypoadrenalinism, vagotony, loss of weight, increased diuresis, reduced thyroid function, raised blood lactic acid, decreased basal metabolic rate, decreased body temperature, and elevated nonprotein nitrogen.

The symptoms indicated above are also characteristic of the end phase of the alarm reaction (counter shock) of the general adaptation syndrome.

In an oversimplified and generalized assumption, it might be stated that certain phases of the general adaptation syndrome seem to be permanently present during the schizophrenic process, caused mainly by a genetically inherited abnormal sensitivity toward stress.

The initially abnormal low threshold toward stress is raised during the schizophrenic process to an abnormally high one.

Whether the inherited low threshold toward stress might play the main role in maintaining the schizophrenic process, or whether there might be certain toxic substances involved in the mediation of the schizophrenic process, i.e., the "regressive adaptation syndrome," cannot yet be decided conclusively. 37 references. 1 figure.—*Author's abstract.*

18. *Contribution to the Study of Paranoid Reactions.* E. STERN, Centre National de Recherche Scientifique, Paris. *Monatschr. f. Psychiatrie u. Neurol.* 127:238, April-May 1954.

Following a review of earlier literature on paranoid reactions, 3 cases are reported in detail, 2 from the war period in persons who had actually suffered persecution, and 1 in whom the reaction was the result of a guilt complex, due to an error actually committed. The first 2 patients were Jews who had been subjected to persecution, deportation, and hardships by the Germans; their reactions persisted for some time after the danger was gone but then gradually subsided. The third patient suffered a guilt complex because she had contracted syphilis before marriage and had not told her husband, and had also taken part in an extramarital love affair. The first 2 patients had suffered from inferiority complexes in their childhood, suggesting that paranoid reactions develop on an affective basis in persons predisposed thereto by their psychic structure. As a rule the reaction dissipates fairly rapidly either spontaneously when the danger ceases to exist, when the patient has adjusted to his environment, or has responded to treatment.

19. *Reciprocal Inhibition as the Main Basis of Psychotherapeutic Effects.* JOSEPH WOLPE, Johannesburg, South Africa. *Arch. Neurol. & Psychiat.* 72:205-226, August 1954.

Previously reported experiments with cats showed that neurotic anxiety reactions could be eliminated by repeatedly feeding the animals in the presence of relatively weak anxiety-producing stimuli. With repetition, progressively stronger anxiety-producing stimuli could be used, because, apparently, a conditioned inhibition of the anxiety responses was gradually built up on the basis of their reciprocal inhibition by the feeding responses.

This led to the hypothesis that psychotherapeutic effects in human neuroses might similarly depend on the evocation, in the presence of stimuli to neurotic anxiety responses, of other responses physiologically incompatible with the neurotic responses. Methods of therapy were accordingly designed by which such incompatible responses could be brought to bear on the neurotic anxiety responses. The usual responses employed were assertion (e.g. expression of resentment), sexual responses, relaxation in the life situation; and relaxation (in a hypnotic desensitizing procedure) and conditioned avoidance responses in the consulting room. La Verne's technic of carbon dioxide therapy was also at times employed,

for in this, too, a basis of reciprocal inhibition of anxiety can be found, as also in the effects of subcoma insulin.

Many of the cases to which the foregoing deliberate anti-anxiety procedures were applied also obtained reciprocal inhibition of anxiety responses from another source—the non-specific emotional responses that often arise from the very existence of an interview situation. The nonspecificity of these responses is indicated by the evidence that about equal success is obtained by a wide variety of older interview methods ranging from traditional counseling to psychoanalysis.

Of 122 cases of neurosis treated on the reciprocal inhibition principle 110 (90 per cent) were either apparently cured or much improved after an average of about 26 interviews. This compares favorably with the 50 to 60 per cent success usually obtained by traditional or psychoanalytic methods, which depend for their success almost entirely on the non-specific interview-produced emotional responses.

Four well known previous theories of the psychotherapeutic process—psychoanalytic theory, Dollard and Miller's behavioristic version of psychoanalytic theory, Pavlovian theory, and Salter's excitatory theory—are each unable to cover fully the following range of facts subsumed by the reciprocal inhibition theory, (1) the effectiveness of the therapeutic measures in animal neurosis, (2) the similar success of the various (nonreciprocal inhibition) interview technic, (3) the effectiveness of subcoma insulin and carbon dioxide therapies, and (4) the unusual success of the special methods reported here. 47 references. 4 tables.
—Author's abstract.

TREATMENT

- a. general psychiatric therapy
- b. drug therapies

20. *Effect of Chlorpromazine on the Behavior of Chronically Overactive Psychotic Patients.*
J. ELKES AND CHARMIAN ELKES, Department of Experimental Psychiatry, University of Birmingham, Birmingham, Eng. Brit. M. J. 4887:560-565, September 4, 1954.

The effect of chlorpromazine was studied in 27 chronically overactive psychotic patients. Of these, 13 were diagnosed as schizophrenics; 7 suffered from recurrent or chronic hypomania; one was a manic depressive; 3 were chronic agitated melancholics, and 3 were confused, restless, overactive female senile dementes. The patients were used as their own controls, chlorpromazine and identical placebo tablets being alternated repeatedly in the same patient over varying periods. Although administration usually began with 75 mg. by mouth (one 25 mg. tablet three times a day) up to 300 mg. a day was given transitorily in most cases. These high dosages led to undesirable side effects, and ultimately 150 mg. (two tablets three times a day) was found to be both safe and, in those cases in which response was noted, effective. Records were kept independently by the medical and day and night nursing staffs, and assessment of improvement was based on the retrospective examination of these records in each case.

Seven patients were considered definitely improved and 11 slightly improved. Improvement often did not become apparent until after three to six weeks of continuous medication.

The affective group appeared to respond slightly better than the schizophrenics. The patients became quieter, less tense, and less disturbed by their hallucinations and delusions, and more amenable to the suggestions and care of the nursing staff. Three patients were thought fit for parole, though none were considered fit for discharge. In no case was the content of the psychosis changed. The schizophrenic patients continued to be subject to delusions and hallucinations, the affective swings of the hypomanic patients continued at intervals normal to each patient, and the chronically agitated melancholics did not themselves admit to any improvement in their mental state. The relief afforded by chlorpromazine thus appears to be principally symptomatic.

Nine patients showed an increase in weight ranging from 11 to 34 pounds in 22 weeks. All were members of the definitely or slightly improved groups, and this increase is believed to reflect their improved eating habits. One case developed transient jaundice, and 2 cases showed slight and transient blood changes. Apart from this the drug appeared to be tolerated well in the dosage ultimately adopted, that of 150 mg. a day. None of the patients required extra sedation when on chlorpromazine. The authors conclude that this drug may have its place in the management of chronically overactive psychotic patients, and that a controlled trial in other psychiatric conditions is needed. A plea is also made for the use of the "blind" self-controlled design of trial, and the training of senior nursing staffs in elementary research methods and medical documentation. 8 references. 3 tables.—*Author's abstract.*

21. *Chlorpromazine and Insulin in Psychiatry.* NEVILLE PEEL LANCASTER AND DEWI H. JONES, Liverpool, England. Brit. M. J. 4887:565-567, September 4, 1954.

In a study on 31 patients, the authors use combinations of chlorpromazine and insulin to study the effect of the former on anxiety symptoms and blood-sugar levels. They also discuss the value of chlorpromazine when used in combination with modified insulin and deep insulin coma treatment. A psychoneurotic anxiety state is defined as a multitude of somatic and mental symptoms brought about by a previously conditioned fear reaction.

It is pointed out that insulin-induced hypoglycemia can cause symptoms similar to those experienced in psychoneurosis and it was upon this state that the effect of chlorpromazine was investigated:

(1) Chlorpromazine (100 mg.) acted on the insulin-induced anxiety state with: (a) some apparent but not significant decrease in total symptoms; (b) some increase in palpitation and tachycardia, and (c) marked decrease in perspiration, flushing, restlessness, anxiety, epigastric sensation, and tremor.

(2) Chlorpromazine had no significant effect on fasting blood-sugar levels (slight hypoglycemic effects may later be revealed on a large scale investigation), or on immediate or prolonged falls in blood-sugar levels following a dose of insulin.

(3) With chlorpromazine, modified insulin therapy induced a state of relaxation which appeared similar to that which can be obtained by light hypnosis. Lessening of excitement of refractory patients and gain in weight in patients with feeding difficulties occurred.

(4) With insulin coma therapy, up to 670 units of insulin have been given along with the chlorpromazine. No difficulty has been experienced in terminating the coma by the usual

methods. By this means some previously unmanageable patients were given a full course of comas.

During this study it was also noted that: (a) no evidence of liver damage occurred when the chlorpromazine was combined with insulin; (b) epileptic fits seemed clinically slightly more prevalent with patients on the combination than with insulin alone. 11 references. 1 table.—*Author's abstract.*

22. *Reserpine (Serpasil) in the Management of the Mentally Ill and Mentally Retarded. A Preliminary Report.* ROBERT H. NOCE, DAVID B. WILLIAMS, Modesto, Calif. and WALTER RAPAPORT, Sacramento, Calif. J.A.M.A. 153:821-824, October 30, 1954.

For centuries the Indian plant, *Rauvolfia serpentina*, has been used in the treatment of mental patients, as well as being employed as a remedy for insomnia, snake bite, anxiety states, and various other conditions. Hakim, the Indian psychiatrist, reported excellent results in the treatment of the mentally ill with this drug, with and without electroconvulsive therapy.

Recently, it has been demonstrated that reserpine, a chemically pure derivative of *Rauvolfia serpentina*, is the chief active alkaloid in the plant and one that can be used safely and effectively both by mouth and parenterally.

Seventy-four mentally ill, "backward" patients, principally schizophrenics, and 15 mentally retarded patients (idiots and imbeciles) received Serpasil for periods ranging up to seven months. All these patients have taken Serpasil by mouth in an average daily dosage of two mg., many having had parenteral injections of 1 to 10 mg. also.

Approximately 80 per cent of psychiatric patients revealed improvement which was attributable to the alkaloid. Some regressed patients, became alert and sociable, while the hyperactive, noisy, assaultive group was tranquilized. The use of restraints, seclusion, and electroconvulsive therapy was decreased by at least 80 per cent since the study began. Remissions were produced in 20 patients, and 8 have been discharged from the hospital. Other patients who were in a remission were placed on indefinite leave of absence from the hospital.

The response of 4 of the idiots and imbeciles was favorable. Ward care was facilitated, and improved sociability and ward adjustment were observed.—*Author's abstract.*

23. *Experimental Method for Control of Narcoanalysis (Une méthode expérimentale de contrôle de la Narco-analyse).* J. DELAY, P. PICHOT, D. LAPLANE AND E. MARTINEZ-GOMEZ, Paris. Encéphale 43:329-336, no. 4, 1954.

Comparing the results of narcoanalysis in two series of patients using, respectively, sodium pentobarbital (sodium pentothal) and sodium amobarbital (sodium amyral), the thesis is advanced that the most productive period in narcoanalysis is that between the beginning of difficulties in attention and concentration and the onset of disturbance of memory.

c. the "shock" therapies

24. 233 Patients with Mental Illness Treated with Electroconvulsive Therapy in the Presence of Tuberculosis. H. PLEASURE, West Brentwood, N. Y. Am. J. Psychiat. 111:177-183, September 1954.

Some 227 mental patients with pulmonary tuberculosis and 6 patients with tuberculosis of other sites were treated with unmodified electric shock treatments of the Cerletti type. Two thirds received 19 or more treatments; some over 100; the average, 25. A total of 203 patients were followed for five months or more, 30 for three to five months, in order to determine the effect of the electric convulsive treatments on tuberculosis. The tuberculosis was considered to have progressed only if the spread occurred within the first three months after treatment or if it was worse at the end of the course of electric convulsive therapy than at the beginning. Spread was determined by x-rays which were taken monthly. In extra-pulmonary tuberculosis other clinical criteria were used.

In 63 patients the pulmonary tuberculosis was inactive (arrested or apparently healed); the number of activations of the tuberculosis in this group was not more than in other patients with inactive tuberculosis without electric convulsive treatment. Of 164 patients with active pulmonary tuberculosis, 160 were studied statistically. Of these, 21.3 per cent had an increase in the extent of the tuberculosis; but worsening of the tuberculosis was much more probable if the patients did not improve mentally from the electric convulsive treatment (52.6 per cent) worse in their tuberculosis) than when the mental symptoms improved (11.5 per cent worse in their tuberculosis).

Drug therapy (streptomycin, PAS, isoniazid) was used before, during, and after electric convulsive treatment for many patients and was effective if treatment resulted in improvement in the patients' behavior and mental condition. It was relatively ineffective in preventing or controlling the spread of the disease if the patient was disturbed or unimproved from the electric convulsive treatment. Twelve had pneumoperitoneum and 6 had pneumothorax during treatment; 4 had old thoracoplasties; 2, recent thoracoplasties; 4, recent excisional surgery—but these conditions did not lead to any untoward results.

Eleven deaths occurred in this series, 9 within the first year after treatment. Only 5 died of tuberculosis. The death rate was lower in the group treated with electric convulsive treatment than other reported tuberculosis death rates in mental hospitals, although many of these patients were acutely ill and severely disturbed when treated.

As a result of this study, patients with inactive tuberculosis, and those with stable lesions (without clinical symptoms or x-ray changes but cavities or positive sputums) are treated solely on the basis of their psychiatric indications without regard for the tuberculosis. Patients with active tuberculosis and urgent indications for treatment such as severe depression, suicidal attempts, refusal of food, or marked excitement are treated at once regardless of tuberculosis. It is important to avoid treating patients with delirium caused by tuberculous meningitis or toxic delirium. They respond very well to streptomycin and particularly to isoniazid but not at all to electric convulsive treatment. Patients with active tuberculosis but without urgent indications for treatment (early catatonic or paranoid schizophrenia, feeding problems, reactions to painful hallucinations, etc.) are, if possible, given the benefit of a few months of drug therapy and bed rest in order to stabilize their tuberculosis.

culosis before proceeding with therapy. If the tuberculosis does not stabilize because of tension and depression, treatment is given. Tuberculosis treatment is more likely to be successful, if electric convulsive treatment was beneficial. 11 references. 6 figures. 5 tables.—Author's abstract.

25. *Circulatory Conditions in Electroshock Therapy With and Without a Muscle Relaxant.*

G. HOLMBERG, S. THESLEFF, O. VON DARDEL, G. HARD, N. RAMQVIST AND H. PETTERSSON, Stockholm, Sweden. Arch. Neurol. & Psychiat. 72:73-79, July 1954.

The intra-arterial pressure and heart rate were recorded and the venous pressure directly measured during electric shock treatment. In unmodified treatment the rise in systolic pressure was sudden and jerky and its maximum quite high. The pulse pressure was sometimes very small during the tonic phase of the fit but very great during the clonic phase. The rise in venous pressure and heart rate was considerable, and the latter often irregular.

When the muscles were relaxed (by succinylcholine iodide) and oxygen administered, the maximum of the systolic blood pressure was (almost significantly) lower, the rise was slower, and more even, and the pulse pressure practically normal. The rise in venous pressure was slight (significant difference). The rise in heart rate was only half as great as in ordinary treatment (highly significant difference), and the heart rhythm was more even during the fit.

Thus the vascular stasis could be practically eliminated and the strain on the circulatory apparatus greatly reduced by muscular relaxation and oxygenation. The risk of cerebral damage is also believed to be less when stasis and asphyxia are eliminated. 24 references. 2 figures.—Author's abstract.

26. *Insulin Comas and Urinary Steroids.* J. DELAY, B. LAINE AND P. BENDA. Encéphale 43:149, no. 2, 1954.

In a series of women suffering from schizophrenia and acute psychoses, the urinary steroids were determined before, during, and after treatment with insulin coma. The 17-ketosteroids were determined by the Talbot technic with Zimmerman staining method and the urinary corticosteroids were determined by a variant of Daughaday's method. In some cases also glycemic response to perfusion of adrenalin according to Thom's technic was studied. A difference in the fluctuation of certain steroids during insulin therapy was observed in two groups, namely the schizophrenic and puerperal psychoses. The latter were usually acute and of recent origin, and most of the patients had been subjected to a series of electroshocks and curettage before being subjected to the insulin treatment.

It is suggested that the metabolic changes characteristic of pregnancy may have been prolonged beyond the time of delivery and might account for the peculiar results. There is an increase in the 17-ketosteroids in the last three months of pregnancy and immediately after delivery, the values returning to normal within a few days. The response of puerperal psychotics might be comparable to that obtained in normal subjects. The response in the schizophrenic patients was diminished.

It is suggested that adrenal activity may play a role of facilitation of general metabolic reactions to stress, reactions released by tissular needs. The role of facilitation of metabolic reactions is here played by the steroids. It is also significant that the posterior hypothalamus

lies in the vicinity of the reticulated system and is particularly sensitive to the presence of circulating insulin as demonstrated by local changes in electrical activity, a prelude to hypophyso-adrenal activation. The difficulties of technic are stressed, including biochemical factors and the effect of electroshock on the steroids.

For Reference

27. *The Effect of Electro-Convulsive Therapy on the Psycho-Galvanic Response.* M. BASSETT AND W. ROSS ASHBY, Gloucester, England. *J. Ment. Sc.* 100:632-642, July 1954.
11 references. 4 figures. 1 table—*Author's abstract.*

neurology

CLINICAL NEUROLOGY

28. *Ischaemic Lateral Popliteal Nerve Palsy.* FERGUS R. FERGUSON AND L. A. LIVERSEDGE, Manchester, England. *Brit. M. J.* 4883:333-335, August 7, 1954.

The relative parts played by compression and ischemia in the production of peripheral nerve lesions and in particular lesions of the lateral popliteal nerves have been considered by various authors, but there are few accounts of the occurrence of frank vascular disturbance in association with foot drop. This paper records 9 cases in which a very definite vascular abnormality appeared to be the cause of the foot drop. In 6 women and 3 men, peripheral vascular disease was followed by sudden onset of foot drop. Most of the cases had diffuse obliterative arteritis, but in 1 the source of the disorder was a rheumatic mitral valve lesion with thrombo-embolic occlusion of the right femoral artery.

The disturbance is primarily motor and the associated sensory disorder variable and much less obvious. The prognosis for the local condition is good, recovery taking place with conservative measures including the provision of a light toe-raising spring, in two to three months. Two patients died from associated coronary disease.

In a discussion of the special susceptibility of the lateral popliteal nerve to ischemia, it is pointed out that the nerve has a very tenuous blood supply in the popliteal space, with the result that an occlusion of the femoral or popliteal artery constitutes a severe ischemic threat to the lateral nerve. The medial popliteal nerve has, on the other hand, a rich collateral supply from a number of sources and so is less liable to critical ischemia if only one artery is occluded. 8 references.—*Author's abstract.*

29. *Cheiralgia Paresthetica—Wartenberg's Disease.* BERTRAM E. SPROFKIN, Nashville, Tenn. *Neurology* 4:857-862, November 1954.

Three cases of cheiralgia paresthetica, a mononeuropathy involving the superficial branch of the radial nerve, are reported. Paresthesias, dysesthesias, and hypesthesia of the ulnar surface of the thumb comprise the essential features of this syndrome. An area of sensory

loss over the ulnordorsal aspect of the thumb was demonstrated in all cases. Spontaneous recovery ensued during a period of two to three weeks. The cause of this disorder is not known, although in previous reports, it has been attributed to the trauma of a wrist watch band.

The significance of this benign and ephemeral disorder relates largely to its differential diagnosis. Unless the physician is aware of such harmless and self-limited affections as cheiralgia paresthetica and the analogous mononeuropathies, he is apt to undertake useless and often hazardous diagnostic procedures and treatments. 11 references. 2 figures.—*Author's abstract.*

30. *Case Studies in Cerebral Anoxia: Cerebral Changes Incident to Hyperinsulinism (Hypoglycemia).* CYRIL B. COURVILLE, Los Angeles, Calif. Bull. Los Angeles Neurol. Soc. 19:29-35, March 1954.

This case supplements the author's previous series of case studies on cerebral anoxia. The patient was a man 60 years of age. He had had repeated "convulsive" seizures with hyperkinetic phenomena for a year before admission to the hospital. There was no loss of consciousness during those seizures, and they were relieved by eating; later a "rage reaction" developed as a part of the seizures. In the hospital the seizures were found to be associated with severe hypoglycemia; the patient died in coma a few days after admission to the hospital. At autopsy, it was found that the hypoglycemia was due to a malignant tumor of the pancreatic islets. Pathologic changes in the brain included widespread necrotic changes in the nerve cells, such as have been observed in other cases of cerebral anoxia, and also focal cerebral softening, congestion, and hemorrhages. While the changes of the first type are attributed to deficient cellular oxygenation in a state of hypoglycemia with a "seriously reduced" supply of glucose to the cerebral tissues, the changes of the second type are attributed to ischemia resulting from vasomotor dysfunction, probably repeated vasospasms. 10 references. 3 figures.

31. *Genital and Sphincter Symptoms in Multiple Sclerosis.* JOSEPH WILDER, New York, N. Y. Dis. Nerv. System 15:200-206, July 1954.

The author surveys the extremely contradictory figures of literature concerning the rectal, urinary, and genital symptoms in multiple sclerosis. He compares them with his own experiences in 140 cases. There was a history of bladder disturbances in 63 per cent, rectal disturbances in 71 per cent, of potency in 35 per cent, and of menstruation in 73 per cent. It is of great practical importance that in 3.7 per cent the bladder symptoms preceded the onset of other symptoms; in 21 per cent the rectal symptom (eliminating cases of life long constipation only 6 per cent), in 9.5 per cent the impotency, and in 32 per cent the disturbances of menstruation. The latter figure shrinks to 5 per cent after the elimination of cases where these disturbances antedated the other symptoms by more than one year.

The neglected menstrual disturbances are discussed at length and the question is raised whether these disturbances are not among the etiologic factors of multiple sclerosis.

In the last part the author analyzes the effect of Pancorphen (heart and pancreas extracts with phenol) on these symptoms. These symptoms are often temporarily altered within

the framework of the "focal" responses characteristic of this therapy. Where the symptoms existed for over six months 57 per cent of the rectal, 54 per cent of the urinary, and 25 per cent of the potency symptoms improved. Where the symptoms were of less than six months duration the corresponding figures were 81, 77, and 21 per cent. Therapeutic results in menstrual disturbances were poor. 27 references. 1 figure. 3 tables.—Author's abstract.

INFECTIOUS AND TOXIC DISEASES OF THE NERVOUS SYSTEM

32. *Mental Disorders in the Course of Meso-diencephalic Tumors (Les troubles mentaux au cours des tumeurs de la région mésodiencephalique)*. J. DE AJURIAGUERRA, H. HECAEN AND R. DE SADOUN. *Encéphale* 43:406-478.

Twelve cases of meso-diencephalic tumors with predominantly mental symptoms showed disturbances of consciousness of varying degree and impairment of memory. A Korsakow-like syndrome seems to be noted particularly in fronto-hypothalamic lesions. Thalamic tumors, which are rare, may manifest themselves by a dementing state of rapid evolution. 15 figures. 97 references.

33. *The Fate of Clinically Unrecognized Intracranial Meningiomas*. MATTHEW T. MOORE, Philadelphia, Pa. *Neurology* 4:837-856, November 1954.

Meningiomas are known to exist within the cranial cavity for considerable periods of time before making their presence known. Although of slow growth, symptoms which may lead to erroneous conclusions regarding the cell type of lesion may appear quite rapidly, and in many instances obscure the true cause of cerebral vascular ictus or altered consciousness secondary to metabolic or cardiorenal disorders.

The history and clinical course of 10 cases of individuals harboring intracranial meningiomas are given in detail to illustrate those features which influence the failure to recognize the presence of such a new growth. Among the 10 cases only 2 were considered as brain tumor suspects on admission to hospital, whereas the remaining 8 were admitted with a variety of diagnoses, the most common being that of a vascular ictus. This diagnosis was influenced by the age range of 51 to 83 years. None of the 10 patients was considered as a brain tumor suspect before admission to the hospital, despite suggestive and overt symptoms, and signs of brain tumor. These endured from one month to five years in 7 patients while in 3 no symptoms referable to brain tumor were present before admission to the hospital. Headache and mental symptoms were the most frequent early signs, symptoms which are also characteristic of cerebral vascular disorders.

The most common objective findings consisted of motor defects and mental abnormalities, likewise commonly encountered in cerebral vascular disease. Five patients developed sudden apoplectiform onset resulting in the diagnosis of cerebral thrombosis or hemorrhage. This may also occur in hemorrhage within a glioma. Three of the cases studied in hospital were considered to be gliomas. Clinical criteria and ancillary aids are far from infallible in differentiating meningiomas from gliomas, hence exploratory craniotomy with inspection is advised. Five patients were operated after study disclosed brain tumor. Five patients died from within 35 minutes to 38 days after admission to hospital and among these, menin-

gioma was a fortuitous finding at autopsy. Attention is called to the need for "tumor consciousness" regarding patients past 50 in whom the presenting clinical features resemble the more commonly encountered vascular, metabolic, toxic, psychotic, or inflammatory syndromes. 13 references. 16 figures. 5 tables.—Author's abstract.

NEUROPATHOLOGY

34. *Contribution to the Pathology of Toxoplasma-Encephalitis.* G. PILLERI, Psychiatrischen Universitätsklinik Waldau/Bern. *Monatschr. f. Psychiatrie u. Neurol.* 127:250, April-May, 1954.

Three cases of human toxoplasmosis of the central nervous system are described in detail. The first case was that of a 15 year old feeble-minded boy who had most probably acquired the infection during intrauterine life. He was born in a severe state of asphyxia and was malformed. The organism *Toxoplasma hominis* was demonstrated histologically in its developmental stages which are known to remain latent in the tissues for long periods. There was a severe diffuse meningitis of the entire cortical surface. The histopathologic findings are described in detail. There was no calcification like that observed in many cases of toxoplasmosis.

The second case was seen in a young girl of 17, who had suffered meningeal disease in infancy, leaving a severe cerebral defect involving predominantly the medullary portion of the brain with subcortical areas of necrosis leaving only cicatricial residua of long past necrotizing encephalitis. The meningeal reaction was not so marked as in the first case. Bulbar symptoms developing shortly before death were attributed to hydrocephalus. Peculiar changes in the cerebellar cortex suggested a hemorrhagic process. It could not be definitely determined in this case whether the toxoplasmosis was acquired congenitally or post-natally. However, the histologic findings suggested extrauterine infection.

The third case occurred in a woman of 49 years, who had suffered a dog bite at the age of 3½ years followed by acute cerebral disease, loss of vision, convulsions, fever, and headache. These symptoms retrogressed leaving a symptomatic epilepsy that responded fairly well to treatment. The patient died of pulmonary tuberculosis. The brain showed dystrophic calcifications of apparent focal encephalitis, suggesting spontaneously healed toxoplasmosis. It is well known that dogs are often infected with this organism and then show a tendency to bite, so there may have been a direct transmission of the infection.

35. *Brain Changes in Patients with Extensive Body Burns.* LEO MADOW AND BERNARD J. ALPERS, Philadelphia, Pa. *Arch. Neurol. & Psychiat.* 72:440-451, October 1954.

Reports on the neuropathologic findings in patients with extensive burns are meager. The study of the central nervous system changes in 2 such patients are reported. The first was a 14 year old boy who suffered third degree burns on 40 per cent of his body surface in an airplane accident. He lived 16 days. His brain showed edema and hyperemia. There were several fresh hemorrhages within the white matter and small areas of demyelination. The ganglion cells showed toxic changes including acute swelling, chromatolysis, and eccentrically placed or extruded nuclei.

The second case was a 35 year old factory worker who burned his entire body except his scalp, eyelids, and the soles of his feet. He showed changes similar to those described above but the demyelinization was more extensive. These changes suggest toxic rather than an anoxic effect on the central nervous system. 16 references. 4 figures.—*Author's abstract.*

36. *Brain Pathology in Congenital Reading and Writing Weakness.* C. FAUST. *Nervenarzt.* 25:137-145, April 20, 1954.

The case of a congenital reading and writing weakness in a 24 year old man is reported in detail. This defect had been observed in his mother's family and was present in five of her 10 children, some of whom also suffered from other congenital defects such as left-handedness, hare-lip, epileptic attacks, and cystic tumor of the neck. The results of various tests and neurologic examinations are given in detail. There were focal symptoms of the left parieto-occipital region. The patient's twin brother had a similar affliction. This weakness in reading and writing stood in strong contrast to the industrial and technical efficiency of the patient and his quick understanding and ability to repeat the spoken word. Attention is directed to peculiar differences in learning from the spoken and written word as emphasized in recent French literature.

Other deficiencies in the present case included difficulty in matching colors, slight constructive apraxia in drawing, difficulty of interpreting the mimic expressions of persons in pictures and films, and difficulty in naming months and writing the figures of several numbers.

These defects were hitherto regarded only as associated symptoms of congenital weakness of reading and writing, but must be looked upon as part of the basic disturbance, the reading and writing weakness being only the dominant symptom. Pathologically it is assumed that lesions of the left parieto-occipital region are involved as demonstrated in the case described by ventricular differences, air encephalography, and practically constant focal findings in three repeated electro-encephalograms.

The patient had also suffered since childhood from epileptic seizures with optic aura. It is assumed on the basis of the findings in this case, in his family, including his twin brother, that this disease is an expression of localized cerebral anomaly. It would be of interest to determine from future examinations whether congenital reading and writing weakness constitute part of a general disturbance. 31 references. 5 figures.

CONVULSIVE DISORDERS

37. *Rapid Determination of Optimum Medication in Recalcitrant Cases of Epilepsy.* TRACY J. PUTNAM, SANFORD F. ROTHENBERG AND NICHOLAS A. BERCEL, Beverly Hills, Calif. *Arch. Neurol. & Psychiat.* 72:169-179, August 1954.

A method is described which permits a rapid, though expensive and rather disagreeable, method of evaluating anticonvulsant drugs in patients suffering from various types of seizures. Its disadvantages are such that it should find use only under special conditions, in patients not promptly relieved by "standard" treatment. In the past five years (to 1953) it has been employed for 27 of the 75 patients treated.

The method consists in administering the drugs to be tested in series, approximately one a day, in maximal tolerated doses. After each dose has had an opportunity to exert its maximal effect, an electro-encephalogram is taken. A comparison of the records usually shows quickly which drugs are preferable and which are likely to prove disadvantageous in each patient tested.

The results of this investigation show clearly that there is no single "best" drug for the treatment of epilepsy.

In the resistant, difficult cases submitted to these tests, on occasion no drug was found particularly effective. The most effective drug in the test was sometimes poorly tolerated by the patient. With few exceptions, however, those drugs which did not improve the electro-encephalogram abnormalities, or which made them worse, were ineffective or deleterious, so that the field of choice was correspondingly narrowed.

The use of this method may save much time, even years, of experimentation in order to determine the medication required to keep the individual patient seizure-free or as well as possible. It probably does not improve the end result, as compared with the standard method of trial and error. 27 references. 11 figures. 1 table.—*Author's abstract.*

DEGENERATIVE DISEASES OF THE NERVOUS SYSTEM

38. *Myasthenic and Myalgic Syndrome Presenting a Pseudomyopathy of Interrupted Course.*
TH. ALAJOUANINE, A. LEMAIRE AND A. BOURGUIGNON. *Révue neurol.* 90:3-12, 1954.

An unusual myasthenic and myalgic syndrome is described in a 28 year old man, who 16 years before consultation, suffered unusual muscular fatigue following an ordinary infection. The muscles of the shoulders, pelvis, and legs were most involved. Recurrent attacks of exacerbation followed periods of complete or partial relief. Recently he had fallen while walking. Improvement followed administration of vitamins B₁ and C and injection of a stock vaccine containing Ducrey's bacilli. The regression periods totaled 12 years in all—the longest eight years and four months. The periods of exacerbation totaled four years, averaging seven months and with a maximum length of 17 months.

Infections during the winter and early spring seemed to play an exacerbating role. The topography of involvement did not change, each attack being an exact replica of the foregoing, thus presenting a course definitely not characteristic of progressive muscular dystrophy or myositis. There appeared to be a contrast between myalgia and muscular consistency as observed in the myalgias of secondary syphilis.

Electrophysiologic tests gave evidence that the process persisted even during remissions, and suggested a neurogenic origin. Muscular biopsy findings were in complete discord with the electrophysiologic findings. Histologic changes were insignificant. Myalgia developed 11 years after onset, suggesting that up to that time the changes were purely functional. Recently all attacks were associated with myalgia and regressions were only partial. There was however no exacerbation from one attack to another. Digestive symptoms suggested a possible involvement of the digestive muscles. Endocrine tests yielded negative results, and there was no demonstrable metabolic disorder. The course of the disease seemed unaffected by treatment.

There was evidence of a degenerative muscular process of slow interrupted course with exacerbations influenced by infections and seasonal factors. The degenerative process was not similar to that observed in progressive muscular dystrophies or inflammatory myositis. Only future observations can determine whether this is a new clinical entity or only a special form of myasthenia. 8 references. 3 figures.

39. *Differential Diagnosis between Brain Tumor and Encephalitis. Contribution to the Problem of Cerebral Pseudotumors.* H. GRAGE. Psychiatrie, Neurol. u. med. Psychol. 6:134-138, May 1954.

In spite of all modern methods, it is frequently impossible to determine the cause of increased intracranial pressure. Particular difficulty has been encountered in the differential diagnosis between brain tumor and encephalitis. No reliable differential symptom has been demonstrated, and even choked disc is not of determining value. It is almost impossible to differentiate between intrapontine tumor and disseminated encephalitis.

Four illustrative cases are described. There seems to be an increase in the number of cases of encephalitis simulating brain tumor and it would, therefore, appear timely to warn physicians of the danger of errors in diagnosis. The best diagnostic aid is afforded by roentgenographic study of the ventricular system and brain puncture. In the 4 cases presented, even these measures failed to yield a correct diagnosis. Only the course and autopsy findings are indicative. Frequently encephalograms repeated over a long period may prove helpful in detection of tumor. 12 references. 4 figures.

ELECTROENCEPHALOGRAPHY

40. *The Electroencephalogram in Blood Diseases: (Abnormalities Observed in Two Patients).* SAMUEL M. TAROWER, HENRY J. WHELLWRIGHT AND FRANKLIN K. PADDOCK, Pittsfield, Mass. Dis. Nerv. System 15:232-235, August 1954.

In the course of study of 2 patients with blood diseases, abnormal electroencephalograms were found. Standard textbooks and periodicals did not reveal any significant information on this subject.

One of the patients, a 57 year old female had leukemia of the myelogenous type with megakaryocytosis and thrombocytosis. Over a period of some months her condition became progressively worse and she ultimately died. An autopsy was done. A single electroencephalogram was obtained in her case and this was abnormal. The record showed a moderate amount of 5 to 7 per second activity and some 2 to 3 per second activity.

The significance of this abnormality was not fully realized until the second patient was studied. The latter was a 62 year old female with polycythemia vera. In this patient many electroencephalograms were done. There was definite improvement in the recordings as the patient's clinical state improved. Moreover, the improved electroencephalograms showed a definite correlation with the lowered red blood cell count. There was marked contrast between the relatively normal neurologic findings and the abnormal electroencephalographic records of these patients. This was best seen in the patient with polycythemia.

She complained of severe headache but objective neurologic examination revealed no definite abnormalities. However, her electroencephalogram showed prominent abnormal slow waves.

It was concluded that the abnormal electroencephalograms in these 2 patients represented a laboratory confirmation of previously described neurologic involvement of the blood diseases. Apparently, electroencephalographic studies are rarely done in such patients since the primary diagnosis is usually established early by routine blood studies. The neurologic symptoms which occur in patients with blood diseases are probably accepted as a known type of complication and further investigation may seem unnecessary to the clinician. The more widespread use of the electroencephalogram in blood diseases will reveal significant clinical and hematologic correlations. 6 references. 4 figures.—*Author's abstract.*

41. *Neurological Sequelae of Tuberculous Meningitis in Children (Les séquelles neurologiques de la meningite tuberculeuse chez l'enfant).* H. DANON-BOILEAU. *Encéphale* 43:73-92, no. 1, 1954.

Of 268 children who recovered from tuberculous meningitis, 14 showed hemiplegia as a sequel; 12 of these 14 children were studied. Four degrees of hemiplegia were distinguished; in the most severe form, form I, the patient was unable to walk without support, and the upper extremity on the affected side was only slightly movable. In form II, the patient could walk without support, but this involved stumbling and frequent falls; though some flexion and extension of the forearm was possible. In form III, the patient could walk almost normally but with a slight limp and was easily fatigued; movements of the hand were abnormal. In form IV the sequelae were slight, affecting the upper extremity more than the lower, and often were clearly demonstrated only by neurologic examination.

The most severe forms of hemiplegia (I and II) occurred in children who had tuberculous meningitis before the age of 5 years, and usually before the age of 3 years; only one child less than 5 years of age showed the mildest type of hemiplegic sequelae (form IV). Patients with the most severe form of hemiplegia (I) and mental retardation showed no evidence of improvement. Patients with form II may in the course of several years show definite progress, but the prognosis is not favorable. In the less severe forms (III and IV) patients may become practically, if not neurologically, normal.

book reviews

The Concept of Schizophrenia. W. F. MCAULEY, M.D. Philosophical Library, New York, 1954. Pp. 145. Price \$3.75.

The author, a psychiatrist from Northern Ireland, concisely presents the essentials of schizophrenia. The chapter titles indicate the scope of this neat and compact survey: "The Scientific Recognition of Schizophrenia," "The Dynamic Concept of Schizophrenia," "The Role of Heredity," "The Impingement of Social and Environmental Conditions upon the Personality," "Neurophysiology and Metabolism," "Diagnosis," "A Survey of Modern Treatments," and "Conclusions."

The author emphasizes the importance of regression as a cardinal point which supports the concept of dynamic faulty adaptation and stresses the relationship between psycho-neurosis and schizophrenia. He concludes "that the schizophrenic mind is one that has not adapted itself to the social environment. . . . It has first hesitated and then turned back to fulfill its ambition in the fantasy of childhood, ignorant that such uninhibited dreaming contains pain as well as pleasure and demands the seclusion of such an individual from society."

There is a bibliography of 110 references, largely from English sources. The principal omission noted is that of references to psychotherapeutic possibilities. The book, however, is a valuable compend, and otherwise broad in its approach.—*Winfred Overholser, M.D.*

Personality through Perception, An Experimental and Clinical Study. H. A. WITKIN, H. B. LEWIS, M. HERTZMAN, K. MACHOVER, P. B. MUSSNER AND S. WAPNER. Harper & Bros., New York, 1954. Pp. 571. Price \$7.50.

It has been growing increasingly apparent during the last 10 to 20 years that the process of perceiving and the personality of the perceiver were closely interrelated. Studies of personality in relation to perception have been appearing recently but it was these authors who first attempted to relate to personality variables a single, if complex perceptual function. In all its ramifications it has taken them over 10 years, but the result can be considered a step forward for psychology in general, as well as an advance in bringing closer together the branches of experimental and clinical psychology.

The perceptual process discussed is the capacity of the individual to detect the upright. How well is he able to tell the direction of the vertical when he is seated in a tilted chair, in a tilted or a rotating room? Three different tests of this ability were used. Great differences were soon apparent among the individuals tested, all of whom were college students. In order to understand the ability of an individual to orient himself in these laboratory situations, an intensive study of his personality was attempted. For this, the interview, the Rorschach, the thematic apperception test, the figure drawing, and other tests were used.

Specifically, the perceptual tests showed that people differed markedly from one another in the extent to which they were dependent upon the visual field in establishing the direction of the upright, conversely, in their ability to utilize bodily experiences in overcoming the influence of the field, and in separating an item from its context. People were, to a great extent, self-consistent in the various tests showing a characteristic way of perceiving. Even when a different kind of test was added (where simple figures were to be located in a complex structure) field dependent people remained field dependent. Yet in this embedded figures test neither orientation in space nor the use of the body were involved.

It became important to discover whether dependence upon the outer field in perception is associated with dependence upon the external environment generally. Conversely, are those who can resist the field, who can separate an item analytically from the configuration in which it occurs, more independent of their environment? One wonders whether any of the subjects were "reality oriented" in the sense that they could use the field when it was best to do so and disregard it otherwise. In other words could any of the subjects detect the

vertical satisfactorily in all three perceptual tests, including the rotating room where kinesthetic cues were a disadvantage rather than an advantage?

Various ways of scoring interview variables and tests were devised so that they would presumably differentiate field-dependent from field-resistant persons. Furthermore the scores were differentiated in such a way as to show the amount of introspection (including self awareness and self esteem) on the one hand and resources for coping with the environment on the other. These differentiations had to be made initially on the basis of hypotheses derived from the perceptual tests.

Remarkably high correlations between combined perceptual scores and the selected personality scores were obtained. Many were significant at the 1 per cent level of confidence. The personality characteristics found to be particularly relevant to performance in the perceptual tasks were roughly of three kinds, the nature of an individual's relation to his environment, the way in which he manages his impulses and strivings, and the kind of conception he has of himself. Passivity, anxiety, lack of awareness of inner life, fear of aggressive and sexual impulses, and lack of control over them are all characteristic of field-dependent people. Low self esteem and low evaluation of one's body also are prevalent. Conversely there are to be found in the independent group: active coping with the environment, closer communication with and better control of their own impulses, relatively high self esteem, and a more mature, differentiated body image.

In order to test the findings on other groups, children of various ages and hospital patients were given similar batteries of perceptual and personality tests. Similar relationships were found in these groups and there was indication in the children's tests that inability to separate item from context may be associated with relative immaturity. However, this suggestion seems to be contradicted by the finding that there is a rise in field dependence in the later teens and that a number of hospital patients give extremely independent performances (worth mentioning are paranoid schizophrenic men).

The relationships between this group of perceptual tests and the personality tests are much less significant for women than for men. Women are more field-dependent, but this characteristic in them is not as likely to be correlated with the particular personality traits described. Whether this is in part because the environment demands less active coping from women, less necessity to depend upon their bodies or upon analytical methods is not clear but it is noteworthy that the sex differences are not so great among children and that the rise in field dependency after age 17 is greater for women.

Adverse criticisms seem out of place in reviewing a work which is the first of its kind and which will lead to refinements of method and new answers to many questions. Inclusion of the actual data at least in the appendix including mean scores and standard deviations for such things as the various Rorschach categories would have answered questions about such things as, for example, the amount of overlap and the reasons why no shading categories were worthy of inclusion. The large amount of data perhaps precluded this.

The study is an outstanding contribution which should lead the way to greater concern with the unique personality of the subject of an experiment whether the experimentalist be studying perception, learning, response to emotional stimuli, or something else. Experience in the clinic should become more important for the experimentalist, and the clinician will,

it is hoped, in his turn show less tendency to abandon experimental method, controlled conditions, and critical thinking when he is in the field.—*Margaret Ives, Ph.D.*

Psychomotor Aspects of Mental Disease. An Experimental Study. H. E. KING. Harvard University Press, Cambridge, Mass., 1954. Pp. 185.

The experiment reported here was undertaken to study the relationship between psychomotor function and behavior disorders. The tests included measures of the speed of initiating, continuing, and controlling fine psychomotor movements. They were administered individually to a group of normal subjects, a group of chronic schizophrenic patients with varying degrees of behavior disorder, and groups of patients with diagnoses of pseudo-neurotic schizophrenia and psychoneurosis.

The comparison of performance by normal and psychopathologic subjects taking part in the experiment demonstrated that a psychomotor defect characterized the states of disordered behavior. The defect was found to be of varying degree depending upon the type and amount of behavioral deviation present but it presented a consistent over-all pattern of disturbed psychomotor function which accompanies the symptomatic expression of mental disease. This conclusion has been clinically and experimentally accepted for a long time, as the author himself makes clear when he finally gets around to a survey of previous studies which began in 1874. However, the book may be useful to beginning students in psychology and psychiatry as an introduction to the problem of psychomotor functioning in the behavior disorders in that it provides a brief summary of the literature, a report of some typical experiments, and an excellent bibliography.—*Margaret Mercer, Ph.D.*

Steps in Psychotherapy. JOHN DOLLARD, FRANK AULD, JR. AND ALICE MARSDEN WHITE. MacMillan, New York, 1953. Pp. +222. Price \$3.50.

Steps in Psychotherapy reports 17 hours of a therapeutic case as treated by an apprentice psychotherapist under supervision. One interview is verbatim and the others are reported by selections from recordings. Comments of the supervisor accompany the interview material. The method of therapy is that presented by Dollard and Miller, "a blend of reinforcement, learning theory, and psychoanalysis with Freud providing the power, and learning theory the precision." The first three chapters provide an excellent summary of the theory presented earlier in *Personality and Psychotherapy* (Dollard and Miller, 1950). The second section of the book consists of a verbatim record of several psychologic tests interpreted blindly and independently by two clinical psychologists.

The contribution of learning theory to the therapeutic procedure is not clearly shown in either the interviews or the supervisor's comments. The fact that only selected portions of the interviews are presented may be responsible for what appears to be an over-directive attitude on the part of both therapist and supervisor.

The authors condemn rather unconvincingly the results of what is, in the opinion of the present reviewer, a poorly selected group of psychologic tests.

Recording and analyzing interviews is such an important contribution to training in psychotherapy that even limited attempts to do so are likely to be stimulating and val-

able. Student therapists and their supervisors should find this book useful though, unfortunately, it fails to reflect the critical thinking which has characterized the experimental work of the two senior authors.—*Margaret Mercer.*

Nerve Impulse. Edited by David Nachmansohn, Josiah Macy, Jr. Foundation, 1953. Pp. 224. Price \$4.00.

This compilation of data on the nerve impulse is a further attempt by the Josiah Macy, Jr. Foundation to present developments in a highly specialized field and to record the exchange of ideas and experience between experts participating in the conference on this subject.

The subject of mechanism of vision is presented by Dr. George Wald, the mechanism of hearing by Dr. Hallowell Davis, and sensory receptors by Dr. Yngve Zotterman. There is an opening statement and general orientation on each of the three subjects followed by an informal interrogatory and polemical discourse designed to minimize the barriers of communication between the various disciplines represented at the conference. A further objective is to integrate data from diverse fields. The reader can listen in on the exchange, and in addition to broadening his knowledge of these highly specialized subjects, can also observe the difficulties and need for sharing of data and experience in the rapidly expanding spheres of all scientific sub-specialties. The panel participants including the three essayists give a brief autobiographical sketch and state reasons for their interest in the nerve impulse.—*Harold Stevens, M.D.*

Books Received for Review

Die Bedeutung der Frühkindlichen Hirnschädigung für die Kinderpsychiatrie. Dozent Dr. med. habil. GERHARD GÖLLNITZ, ROSTACH, D. M. 19, 50. Georg Thieme, Leipzig, 1954. Pp. 149.

Abnormal Movements of the Face. SAMUEL C. LITTLE, M.D. U. of Alabama Press, University, Ala., 1954. Pp. 70. Price \$2.50.

Human Relations in Action. H. E. BULLIS AND C. W. KELLY. G. P. Putnam's Sons, N. Y., 1954. Pp. 86. Price \$1.50.

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JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY

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PART I

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*

Physiopathologic Patterns Suggested by the
Treatment of Schizophrenic Patients
with Histamine

WITH PARTICULAR REFERENCE TO THE INSULIN
TOLERANCE TEST

*Guy Nadeau, D.Sc., Yves Rouleau, M.D., Jean Delâge, M.D.,
Maurice Coulombe, M.D., and Marcel Bouchard, M.D.*

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A great proportion of patients with schizophrenia show either a delayed or a decreased sensitivity to insulin, as well as a reduced response to the induced hypoglycemia when tests are performed repeatedly.¹⁻⁴

The insulin tolerance test determines both the sensitivity of the organism to insulin and its response to an induced hypoglycemia. According to Fraser, Albright, and Smith,⁵ the blood sugar normally falls to about 50 per cent of its fasting level 20 to 30 minutes after the intravenous injection of 0.1 unit of insulin per kilogram of body weight, and returns to normal in 90 to 120 minutes (figure 1).

In a recent work,⁶ the authors have observed that about 60 per cent of the subjects under study revealed such an abnormality (figure 1). Insulin resistance in psychotic patients (schizophrenic or other) has also been discussed in other publications.⁷ Furthermore, inhibition of the hypoglycemic action of insulin, by influence of the anterior pituitary and of

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the adrenal gland, is well established. The same glands can also act upon the blood restoration phase following hypoglycemia. In fact, Gellhorn reports that insulin hypoglycemia causes mobilization of the adrenocortical hormones, even in adrenomedullated rats.²⁹

This peculiar physiologic response, as well as other disturbances of carbohydrate metabolism, have been attributed to the specific hormonal imbalance found in psychotics, thus involving the hypothalamic-pituitary-medullo-(or/and cortico)-adrenal system.⁸⁻¹⁵

This way of accounting for abnormal sensitivity and abnormal response to insulin in schizophrenes was strengthened when the authors performed, on the same group of psychotics, the modified glucose-insulin tolerance test proposed by Lazarus and Volk.¹⁶ In this method, 25 Gm. of glucose in a 50 per cent solution are given intravenously, followed 30 minutes later by 0.1 unit of insulin per kilogram of body weight, also given intravenously. The usual glucose determinations are performed at regular intervals. With this modified procedure the sensitivity to insulin, as well as the response to the induced hypoglycemia, was well within normal limits (figure 2), even for the patients who had shown particular insulin insensitivity by the standard insulin tolerance tests.⁶

Since it is known that hyperglycemia has an inhibitory effect on the secretion of epinephrine and probably also on other antagonists to insulin,¹⁷ the authors suggested that the overcompensatory effect of these antagonists to insulin during the fasting state, demonstrable in most schizophrenics, was probably set aside during the primary hyperglycemic phase of the test so that the insulin could exert its effect without inhibition (figure 3). Since then, Lingjaerde¹⁴ has also observed that abnormal sensitivity to insulin and abnormal response to insulin-induced hypoglycemia can be normalized by an additional supply of carbohy-

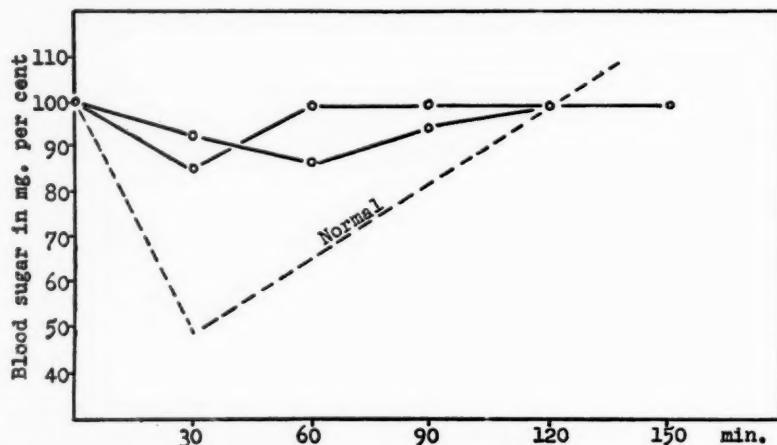


FIG. 1. Subcutaneous insulin tolerance tests of 2 schizophrenic patients showing particular insulin insensitivity. From Nadeau and Rouleau.⁶

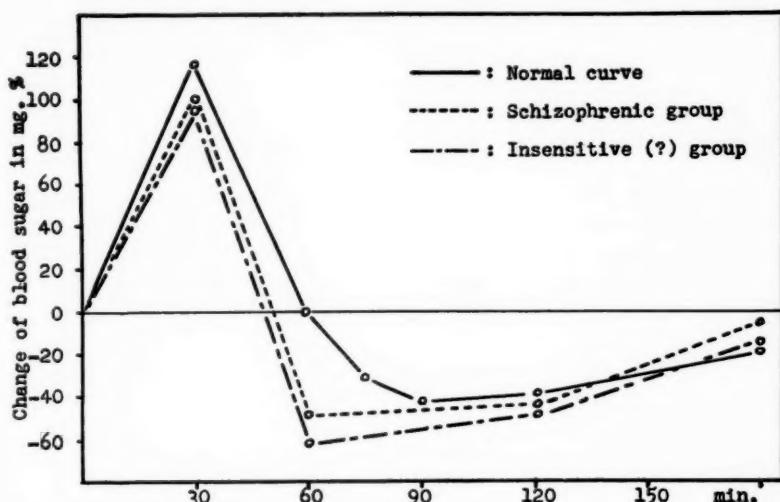


FIG. 2. Glucose-insulin tolerance curves. The so-called *insensitive* group refers to 6 patients who had showed outstanding insensitivity with the standard insulin tolerance test. From Nadeau and Rouleau.⁶

dicates, implying (according to the author) that the alarm syndrome in the active phase of the psychosis involves an increased carbohydrate requirement.

Most workers have also found evidence that sensitivity to insulin increases after treatment with insulin or convulsant therapy in previously resistant patients. "These changes are consistent with adrenocortical (or anterior pituitary) activity in psychotic patients and with lessened hyperactivity in remission of [these] psychoses."⁷

From the assumption that shock therapies, either electroconvulsive or insulin coma, liberate histamine (or a histamine-like substance), Sackler et al^{12, 18, 19} have used it in an attempt to antagonize the so-called overresponsiveness of the adrenal cortex found in certain psychoses, particularly schizophrenia. They have reported improvements of as much as 24 per cent of psychotic cases, when histamine and electric shock were utilized. From then on, however, the various results reported in the literature on histamine therapy have been very controversial.²⁰⁻²⁴

The authors' findings in 100 patients submitted to subcutaneous histamine during a period of 30 days, according to the Sackler technique, were published earlier.²⁵⁻²⁷ It should be mentioned briefly that improvement,* sufficient to permit discharge from the hospital, was attained by 20 of the 100 patients with histamine alone. Of the 80 unimproved patients

* In the present survey, patients who could leave the hospital and be socially readjusted, when their previous behavior had made their hospitalization compulsory, were considered as "improved."

following histamine, 76 were given a course of electroconvulsive therapy alone (20 shocks) with one important improvement. Of 4 patients that received thyroid extract with electroconvulsive therapy, 3 were improved. Following this treatment, insulin coma therapy was administered to 11 patients with resulting improvement in 2 cases, thus supporting the views of the Sackler group^{12, 19} that histamine pretreatment may enhance the effectiveness of certain types of other therapeutic measures, i.e., electroconvulsive therapy and insulin coma.

The high tolerance of the group to histamine (mean dosage: 9.3 mg. of base, the same dose being repeated 45 minutes later) appeared to be a further argument in favor of a physiologic dysequilibrium in schizophrenia. While the histamine technique was investigated clinically, there was some indication that this tolerance might be increasing with the evolution of psychosis. Since then, Lucy²⁴ has also reported that schizophrenia of long standing appears to induce high tolerance to histamine.¹¹

It was also noteworthy that, apart from minor changes during the course of treatment, real clinical improvements were noted chiefly in patients with a recent evolution of the disease (six to 12 months), failures being encountered when the disease extended from two to 14 years. This had already been noted by early investigators of the technique.¹²

EXPERIMENTAL DESIGN

In an attempt to appraise the effect of histamine on the tolerance of schizophrenics to insulin and, possibly, on the mechanisms of homeostatic readjustments, intravenous insulin tolerance tests were performed on 41 (13 female and 28 male) of the 100 subjects submitted to histamine therapy. The patients were chosen at random, the number being limited only by the coordination attainable between the therapeutic staff in scattered wards and the laboratory personnel. At no time during the study was the latter kept informed of any clinical progress, so that the biochemical data might be classified solely upon biochemical patterns. After separation of the biochemical "response-types," association and correlation with clinical course were analyzed.

The tests were performed during the weeks preceding and following the biochemotherapy measure. In some cases, control tests were obtained a few weeks after treatment.

Insulin was administered intravenously in the fasting subjects at the dose of 0.1 unit per kilogram of body weight. Blood samples were collected before, and 30, 60, 90 and 120 minutes after the injection of insulin. On the same morning, glucose levels were determined according to one of the authors' modification of the Benedict method.²⁵ As mentioned previously, the blood sugar normally falls to about 50 per cent of its fasting level 20 to 30 minutes after the injection of insulin and returns to normal in 90 to 120 minutes.¹

CLINICAL DATA

Detailed clinical information on the 100 patients under study was published earlier.²⁷ The following material applies to the 41 patients who were investigated with the insulin tolerance test in order to allow comparison between clinical results and biochemical data.

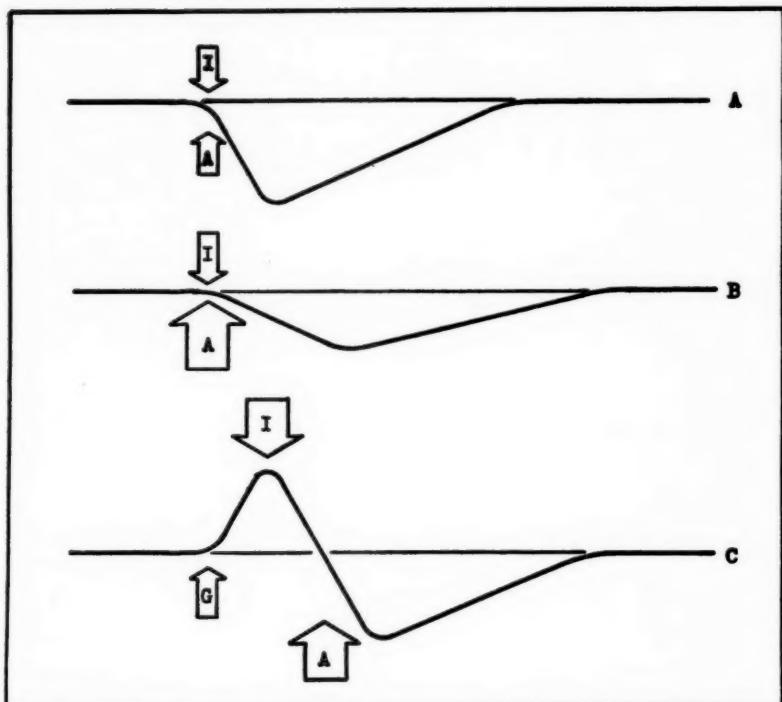


FIG. 3. Probable mechanism of action of insulin (I) and its antagonists (A) on the blood sugar level. In the normal individual (curve A), the hypoglycemic effect of insulin is regulated by its antagonists. In the schizophrenic (curve B), the hypoglycemic effect of insulin is overcompensated by its antagonists. The absence of antagonists to insulin (curve C), during the hyperglycemic phase following the administration of glucose (G), favors the action of insulin.

Evolution of the disease in these patients varied from a few months to nine years. Further information as to age, diagnosis, and other pertinent data are presented in table I.

Previous therapy. Seventeen patients had received electroconvulsive therapy alone, one, insulin coma alone, and 12, electroconvulsive therapy followed by the insulin treatment with one slight improvement in the last instance (obs. 3). One patient had been lobotomized. The 10 others had had no therapy. Hospitalization had to be maintained for every one of these patients (table I).

Histamine therapy. Of the 41 psychotics included, one was much improved, and 6 were improved, after the 30 day course of histamine therapy alone (a remission rate of approximately 17 per cent as compared with 20 per cent reported for the whole group).²⁷ See table I.

TABLE I
General Information on the 41 Patients Included in the Present Study

Obs.	Age	Diagnosis	Evolution	Previous Therapy	Sensitivity to Insulin		Response to Hypoglycemia		Histamine Therapy	Subsequent Therapy & Result
					Before H.T.	After H.T.	Before H.T.	After H.T.		
3	23	S.R.	4 years	ECT, ICT (imp.)	N. (47.5)	Inc. (36.9)	Inc. (118.0)	Dec. (106.5)	Much improved	—
11	22	P	1 year	ECT	Dec.-Del. (91.0)	Inc. (23.6)	N. (100.0)	Dec. (82.1)	Improved	—
9f	32	A	8 months	ECT	Dec.-Del. (78.6)	Inc. (43.8)	N. (98.0)	Inc. (109.0)	Improved	Sust. with ECT
13	21	P	few months	—	Dec. (74.0)	Inc. (39.0)	Inc. (128.1)	Dec. (95.2)	Mild. imp.	Testosterone
33	14	S.R.	1 year	—	Dec. (70.0)	Inc. (51.2)	N. (105.0)	Dec. (100.0)	Improved	—
16	20	H	1 year	—	Dec. (74.7)	Inc. (56.2)	N. (100.0)	Unch. (102.8)	Improved	—
7f	29	H	4 months	ECT	Dec. (63.0)	Inc. (55.5)	N. (100.0)	Dec.-Del. (94.4)	Improved	Sust. with ECT and ICT
24	37	H	10 years	ECT	Dec. (61.0)	Inc. (43.7)	Dec. (80.5)	Inc. (100.0)	Unimproved	BCT (nil)
11f	25	P	2 years	ECT	Dec. (66.7)	Inc. (46.2)	Dec. (77.8)	Unch. (75.0)	Unimproved	BCT (nil)
18	24	H.C.	5 years	—	Del. (56.0)	Sl. inc. (45.0)	Dec. (58.0)	Inc. (125.0)	Unimproved	BCT (nil)
10f	22	S	3 years	ECT	N. (49.1)	Inc. (33.6)	Dec. (73.8)	Inc. (84.6)	Unimproved	BCT (nil)
31	26	A	3 years	ECT	N. (45.5)	Unch. (42.7)	Inc. (122.6)	Dec. (100.0)	Unimproved	BCT (nil)
2f	24	A	1 year	ECT	N. (51.6)	Unch. (49.6)	N. (103.2)	Dec. (91.0)	Unimproved	BCT (sl. imp.)
4f	28	S	3 months	ECT	N. (52.5)	Unch. (51.3)	Dec. Del. (75.0)	Inc. (92.4)	Unimproved	ICT (sl. imp.)
13f	28	H	2½ years	ECT, ICT	N. (50.8)	Unch. (47.0)	Dec. (83.6)	Unch. (88.2)	Unimproved	BCT (nil)
16f	35	P	8 months	ECT, ICT	N. (50.0)	Unch. (50.0)	Dec. (75.0)	Unch. (78.2)	Unimproved	BCT (imp.)
23	28	P	5 years	ECT, ICT	N. (45.0)	Unch. (48.2)	Dec. (90.0)	Unch. (85.1)	Unimproved	BCT (nil)
34	20	H	2 years	—	N. (48.1)	Unch. (48.5)	Dec. (81.8)	Inc. (93.8)	Unimproved	BCT, ICT (nil)
38	20	H	2 years	ECT	Inc. (16.7)	Unch. (16.5)	Dec. (88.9)	Del. (exp.)	Unimproved	BCT (nil)
45	20	P	2 years	ECT	Inc. (34.8)	Inc. (22.3)	Dec. (89.5)	Del. (exp.)	Unimproved	{ BCT (sl. imp.) ICT (nil)}

5f	25	H	2½ years	ECT, ICT	Inc. (36.3)	Unch. (34.3)	Dec. (87.2)	Inc. (100.0)	Unimproved
6f	25	S	6 months	ECT	Dec. (62.1)	Unch. (60.0)	N. (100.0)	Unimproved	ECT (nil)
40	17	H	1 year	—	Dec. (65.0)	Unch. (61.2)	Dec. (92.0)	Unch. (94.4)	/ECT, thyroid (mkd. imp.)
41	23	S	8 years	ECT	Dec. (62.4)	Unch. (60.0)	Inc. (107.6)	Dec. (70.8)	Unimproved
42	20	H	1 year	ECT	Dec. (58.4)	Unch. (60.8)	N. (104.0)	Dec. (84.5)	Unimproved
3f	33	S	1 year	ECT	Inc. (43.4)	Dec. (68.8)	Inc. (113.0)	Dec. (97.2)	ICT (imp.)
14f	23	H	4 years	ECT, ICT	Inc. (31.8)	Dec. (76.4)	Dec. (83.6)	Inc. (119.8)	Unimproved
25	30	H	9 years	—	Inc. (26.4)	Dec. (64.2)	N. (95.0)	Unch. (96.5)	ECT (nil)
22	35	H	many years	—	Inc. (21.8)	Dec. (34.0)	Dec. (78.2)	Inc. (100.0)	Unimproved
26	30	H	6 years	ECT, ICT	Inc. (37.3)	Dec. (48.6)	Dec. (63.5)	Inc. (106.8)	Unimproved
27	25	P	2 years	—	Inc. (35.0)	Dec. (53.4)	Inc. (110.0)	Unch. (106.8)	ECT (nil)
28	24	H	5 years	ECT, ICT	Inc. (34.8)	Dec. (46.2)	N. (100.0)	Unch. (100.0)	Unimproved
30	22	H	6 years	ECT, ICT	Inc. (32.0)	Sl. dec. (38.9)	Dec. (72.0)	Inc. (91.2)	ECT (sl. imp.)
36	29	P	2 years	—	Inc. (31.3)	Dec. (66.6)	Inc. (112.5)	Inc. (128.0)	Unimproved
43	20	H	2 years	ECT	Inc. (31.3)	Dec. (70.6)	Sl. inc. (106.2)	Unch. (106.0)	/ECT (sl. imp.)
35	35	P	6 years	ECT	N. (49.5)	Dec. (62.5)	Inc. (110.2)	Unch. (114.6)	Unimproved
1f	22	H	10 months	ECT, ICT	Dec. (55.0)	Del. (56.3)	Dec. (70.0)	Inc. (81.3)	ECT (nil)
19	26	H	2 years	ECT, ICT	Dec. Del. (52.7)	Dec. (83.4)	Dec. (84.5)	Unch. (88.6)	Unimproved
20	30	H	6 years	ECT	Dec. (71.7)	Sl. inc. (65.0)	Dec. (83.7)	Inc. (125.0)	ECT (nil)
10	24	P	3 years	ECT, ICT	Dec. (59.1)	Dec. (73.0)	N. (81.0)	Inc. (106.0)	Unimproved
37	30	H	7 years	Lob.	Dec. (58.0)	Dec. Del. (64.8)	N. (98.2)	Unch. (94.3)	ECT (nil)

Obs.: Observation numbers followed by letter "f" indicate female patients.

Diagnosis: A (atypical); C (catatonic); H (hebephrenic); P (paranoid); S (simple); S.R. (schizophrenic reaction).

Therapy: ECT (electroconvulsive); ICT (insulin coma); Lob. (lobotomy); H.T. (histamine therapy).

Sensitivity to insulin (during I.T.T.): N. (normal); Dec. (decreased); Del. (delayed); Inc. (increased); Unch. (unchanged). Figures in parentheses indicate lowest blood sugar (in per cent of fasting level) reached. Response to hypoglycemia (during I.T.T.): Same as above. Figures in parentheses indicate highest blood sugar reached. Exp. (extrapolated).

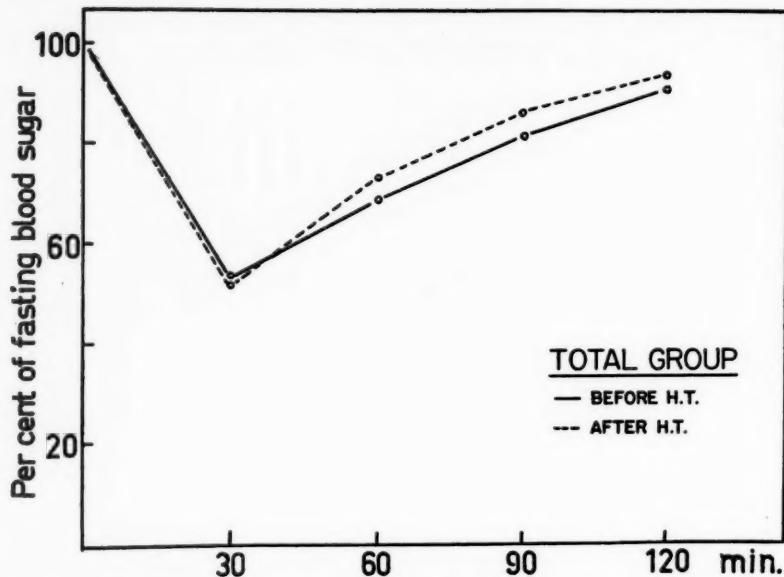


FIG. 4. Mean insulin tolerance curve of the 41 patients included in the present study, before and after histamine therapy.

Additional therapy. One patient with hypogenitalism was given testosterone propionate during histamine therapy. There was a marked clinical improvement in this patient. Improvement obtained with histamine was sustained with electroconvulsive therapy alone in one subject, with this treatment and insulin coma in another (table I).

Among the unimproved patients with histamine, 27 received electroconvulsive therapy alone, with one improvement and 4 slight improvements. Two received insulin coma alone, one with improvement, the other with slight improvement. A course of electroconvulsive therapy, followed by insulin coma, was given to 4 patients, with 2 slight improvements. One other patient was markedly improved when thyroid was combined with electroconvulsive therapy. The last 4 patients had received no further treatment at this writing (table I).

RESULTS OF THE INSULIN TOLERANCE TESTS

Before histamine therapy

(a) *Sensitivity to insulin:* Eighteen of the 41 patients showed a delayed or decreased sensitivity, while 13 showed an increased sensitivity to insulin before treatment. The 10 others were normal (table III). The mean curve of the insulin tolerance test for the whole

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group is illustrated in figure 4. Mean blood sugar 30 minutes after insulin injection is 53.4 per cent of the fasting level, a figure within the normal limits of the test (table II). The lowest blood sugar level attained by each individual is indicated in table I.

(b) *Response to insulin-induced hypoglycemia:* As a whole there was some tendency to a hypoglycemic unresponsiveness in the patients before histamine therapy, as illustrated in figure 4. The mean blood sugar rose to only 90.3 per cent of its fasting level 120 minutes after the injection of insulin (table II). Normally, the blood sugar returns to its fasting level in 90 to 120 minutes. In fact, half of the individuals had a decrease of this type of response (table IV).

After histamine therapy

(a) *Sensitivity to insulin:* The pattern of sensitivity to insulin following histamine therapy is summarized in table III. Fifteen patients showed a decreased sensitiveness, 13 an increased sensitiveness, and 13 no change in sensitivity to insulin (i.e., variation of more than 5 per cent of fasting blood sugar level).

TABLE II
Mean Values of the Insulin Tolerance Tests

Group	Before histamine therapy					After histamine therapy			
	30 min.	60 min.	90 min.	120 min.	30 min.	60 min.	90 min.	120 min.	
Improved patients (fig. 5)	75.1*	82.9	98.5	101.5	43.7	68.6	86.0	98.6	
Unimproved patients (fig. 6)	48.7	66.4	78.7	87.9	53.0	74.1	86.0	92.8	
Total patients (fig. 4)	53.4	69.2	82.1	90.3	51.4	73.2	86.0	93.8	

* Blood sugar in per cent of fasting level.

TABLE III
Sensitivity to Insulin Before and After Histamine Therapy
(Figures Indicate Number of Patients)

Before H.T.	After histamine therapy			
	Decreased (or delayed)	Unchanged	Increased	Total
Decreased (or delayed)	4	4	10 (incl. 6 imp.)	18
Normal	1	7	2 (incl. 1 imp.)	10
Increased	10	2	1	13
Total	15	13	13	41

TABLE IV
Response to Induced Hypoglycemia Before and After Histamine Therapy
(Figures Indicate Number of Patients)

Before H.T.	After histamine therapy			Total
	Decreased (or delayed)	Unchanged	Increased	
Decreased (or delayed)	1	7	12	20
Normal	5 (incl. 3 imp.)	5 (incl. 1 imp.)	2 (incl. 1 imp.)	12
Increased	5	3	1	9
Total	11	15	15	41

(b) *Response to insulin-induced hypoglycemia:* The trends of this response are summarized in table IV. Response, as compared with that before histamine therapy, was decreased (or delayed) in 11 patients, unchanged in 15, and increased in 15 others.

Relation between sensitivity to insulin and evolution of the disease

Table V emphasizes the observation that the majority (10 out of 14) of the patients with a disease of recent onset (12 months or less) showed a *decreased* sensitivity to insulin before histamine therapy. On the contrary, there was a *normal* sensitivity in 7 and an *increased* sensitivity to the same physiologic agent in 12 of the patients with a longer evolution of the disease.

Relation between response to insulin-induced hypoglycemia and evolution of the disease

The most important observation one can gather from table VI is that 16 of the 27 patients with a disease of two years or more revealed a *decreased* response to the hypoglycemia induced by the injection of insulin before histamine therapy.

TABLE V
Relationship Between Sensitivity to Insulin and Evolution of the Disease
(Figures Indicate Number of Patients)

Sensitivity to insulin	Evolution of 12 months or less	Evolution of over a year	Total
Decreased (or delayed)	10	8	18
Normal	3	7	10
Increased	1	12	13
Total	14	27	41

THE INSULIN TESTS AND THE CLINICAL RESULTS WITH HISTAMINE THERAPY

Improved patients: Seven of the 41 patients included in this survey were much improved or improved, according to the definition mentioned earlier. Six of them had displayed, before treatment, a decreased sensitivity to insulin, which was reversed to an increased sensitivity during the brief period of 30 days of histamine administration. The other patient, who had had a normal sensitivity to insulin before treatment, also displayed an increased sensitivity after a successful course of histamine therapy (table III). Figure 5 illustrates the mean insulin tolerance curve for these 7 patients, before and after histamine therapy. Blood sugar (30 minutes after insulin injection) dropped from 75.1 per cent of fasting level before treatment to 43.7 per cent after histamine (normal: 50 per cent). The difference is statistically significant.

It is also noteworthy that the improved patients either had a normal (5 subjects) or increased (2 subjects) responsiveness to the induced hypoglycemia before treatment (table IV). After treatment, this response was significantly decreased (figure 5).

Unimproved patients: A glance at tables III and IV will show that sensitivity to insulin was either unaltered or decreased in the majority of unimproved patients following histamine therapy. On the other hand, response to the induced hypoglycemia was generally unchanged or increased. Figures 6, 7, and 8 illustrate, respectively, the mean insulin tolerance

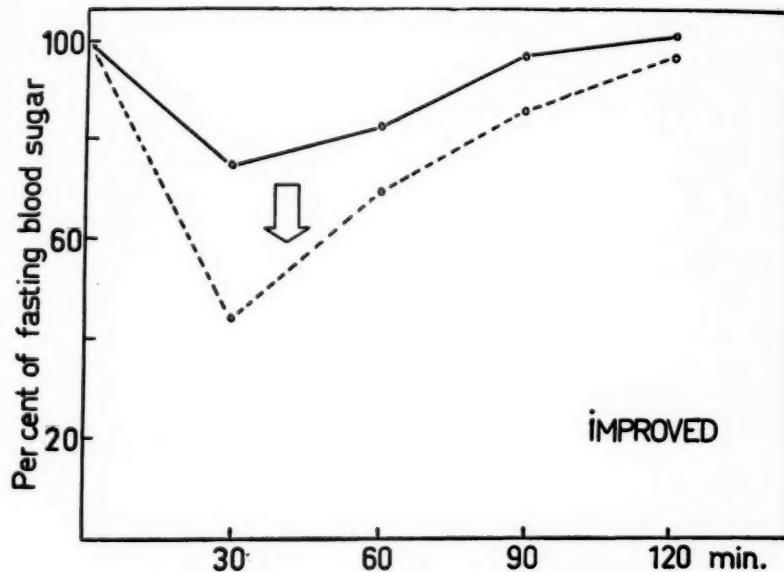


FIG. 5. Mean insulin tolerance curve of the improved patients with histamine.

test curve of the unimproved patients as a whole, and according to their sensitivity to insulin before and after histamine therapy.

Follow-up: Controls were possible on 2 improved patients, four and six weeks later, respectively. There was no change noticeable in the clinical condition or in the insulin tolerance test curves. Table VII also summarizes the follow-up on 6 unimproved patients. Here again, stationary clinical condition is usually reflected in the unaltered insulin tolerance test curves.

COROLLARY

Tolerance to histamine: While the histamine technique was being investigated clinically, there was some indication that tolerance to this physiologic agent might be increasing with the evolution of psychosis. However, no attempt was made, at that time, to correlate these findings. Figure 9 illustrates the relationship between evolution of the disease and the maximum single dose of histamine base tolerated during treatment by 96 patients.

Statistical computation allows for some correlation between the two variables. The mean single dosage tolerated by patients, with a disease of one year or less, was 6.7 mg. (of base), as compared with 10.1 mg. for patients with a longer psychosis.

TABLE VI
Relationship Between Response to Induced Hypoglycemia and Evolution of the Disease
(Figures Indicate Number of Patients)

Response to hypoglycemia	Evolution of 12 months or less	Evolution of over a year	Total
Decreased (or delayed)	4	16	20
Normal	8	5	13
Increased	2	6	8
Total	14	27	41

TABLE VII
Follow-up on 2 Improved and 6 Unimproved Patients with H.T.

Obs.	Interval of time	I.T.T.	Clinical condition
9a	4 weeks	stationary	improvement sustained with ECT
7a	6 weeks	stationary	imp. sustained with ECT and ICT
2a	5 weeks	stationary	slight imp. with ECT
4a	13 weeks	increased sensitivity to insulin	slight imp. with ICT
5a	7 weeks	stationary	stationary
6a	6 weeks	stationary	stationary
41	12 weeks	stationary	stationary
3a	4 weeks	returns to previous level	stationary

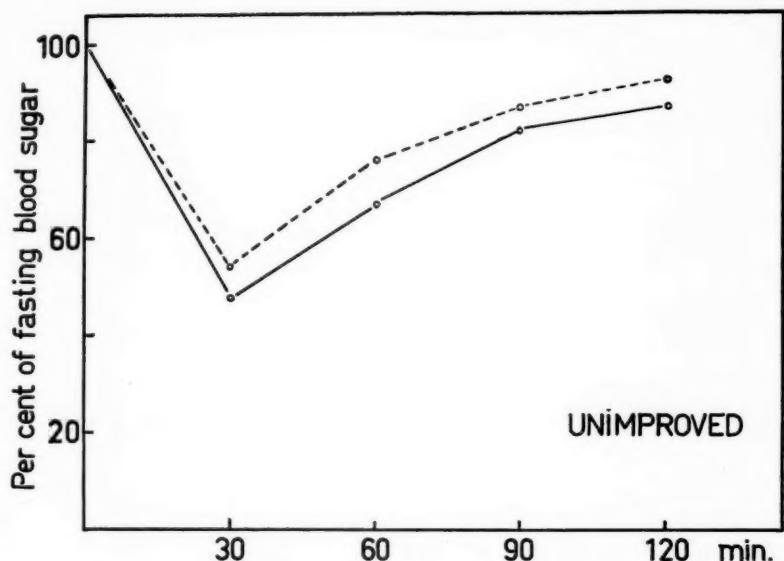


FIG. 6. Mean insulin tolerance curve of the unimproved patients with histamine.

DISCUSSION

The significant changes in the insulin tolerance test curves observed in the present study, after a brief course of histamine therapy, emphasize the influence of this substance upon insulin imbalance among other physiopathologic patterns.

That histamine (in high dosage)* altered other physiologic functions, such as glucose tolerance and eosinophil response to orally administered glucose, has already been suggested by Sackler et al.^{11, 12} These workers have reported that "histamine appeared to be capable of changing towards more normal response the so-called *diabetic-type* curves of glucose tolerance (by the Exton-Rose procedure) found in 75 per cent of [their] psychotics." Thus it seemed that histamine could act in an anti-adrenocortical manner or, in the terms of the investigators, as an antidyne.

The same workers demonstrated that histamine therapy first induced a phase of increased adrenocortical effects, as indicated by eosinophil levels and lymphocyte-neutrophil ratios.¹¹

* Gellhorn has observed that histamine induces eosinopenia in normal, but not adrenomedullated rats, thus inferring that moderate stress activates the adrenocortical hormones through a sympatheticoadrenal discharge. Very likely these experiments were carried out with physiologic amounts of histamine, since the author adds that "more severe stress (such as insulin hypoglycemia) causes mobilization of these hormones even in adrenomedullated animals."²⁹ (p. 320)

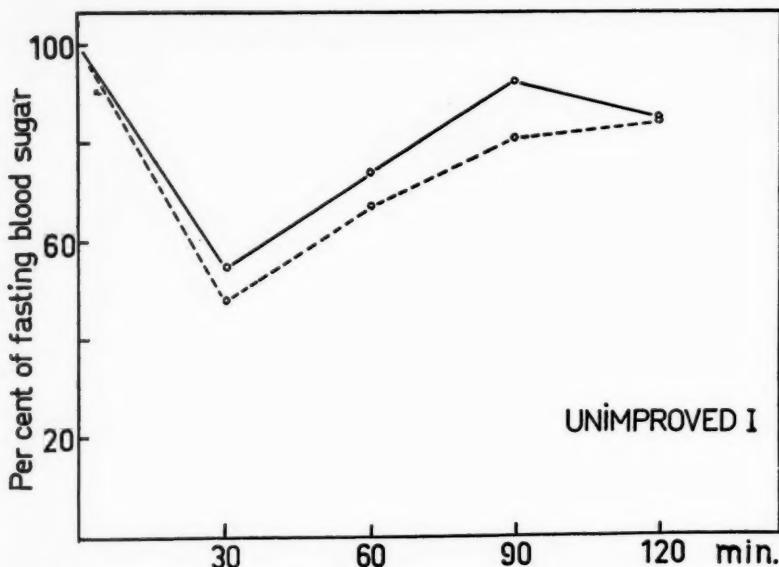


FIG. 7. Mean insulin tolerance curve of the unimproved patients showing no change in sensitivity to insulin after histamine therapy.

Later in the course of therapy, there was some evidence of a decreased adrenocortical activity, more markedly in patients showing clinical improvement.

This dual observation is in accordance with that of most workers who have investigated insulin or convulsant therapies. After treatment, sensitivity to insulin usually increases in previously resistant patients. "These changes are consistent with increased adrenocortical (or anterior pituitary) activity in psychotic patients and with lessened hyperactivity in remission of [these] psychoses."⁷

The authors' following observations, in the present survey, support the view that repetition of histamine in high doses reduces the activity of the adrenal cortex or at least opposes its effect:

1. Sensitivity to insulin was *increased* after histamine therapy in the 7 patients showing clinical improvement (table III and figure 5).
2. Responsiveness to an insulin-induced hypoglycemia was *decreased* after histamine therapy in 5 of the improved patients (table IV).

In addition, the following observations suggest that histamine is effective chiefly on the condition that the adrenal cortex be hyperactive:

1. Before treatment, sensitivity to insulin had been *decreased*, as a rule, in the cases showing clinical improvement (figure 5), but had been *normal* or slightly *increased* in the unimproved subjects (figure 6).

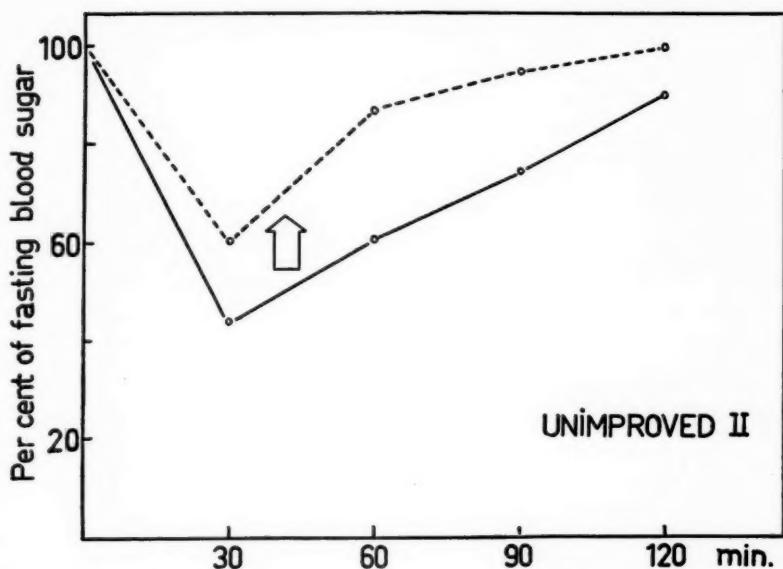


FIG. 8. Mean tolerance curve of the unimproved patients showing decreased sensitivity to insulin after histamine therapy.

2. Before treatment, responsiveness to the insulin-induced hypoglycemia had been increased in the improved group (figure 5), but had been slightly decreased in the unimproved group (figure 6).

Adrenocortical hyperactivity, being consistent with decreased sensitivity to insulin and increased responsiveness to hypoglycemia, appears to condition the effectiveness of histamine as a biochemotherapeutic agent.

This also offers a tentative explanation of the fact observed by proponents of histamine therapy, as well as by the present authors, that clinical improvements are noted chiefly in psychoses of recent onset. "Available evidence suggests that the adrenal cortex is hyperactive in patients with psychoses of recent onset; chronicity being associated with a disappearance of these findings in most cases."⁷ In the present study, hyperactivity of the adrenal cortex, as indicated by decreased sensitivity to insulin, was demonstrable in at least 14 of the patients with a short evolution of the disease, including 6 of the 7 patients improved with histamine. The other patient who benefited from treatment had had an evolution of four years, yet adrenocortical hyperactivity was still demonstrable in this patient. Again in this case, treatment was followed by a decreased activity of the adrenal cortex. On the other hand, adrenocortical hypoactivity was demonstrable in at least 21 of the 27 patients with an evolution of the disease of two years or more.

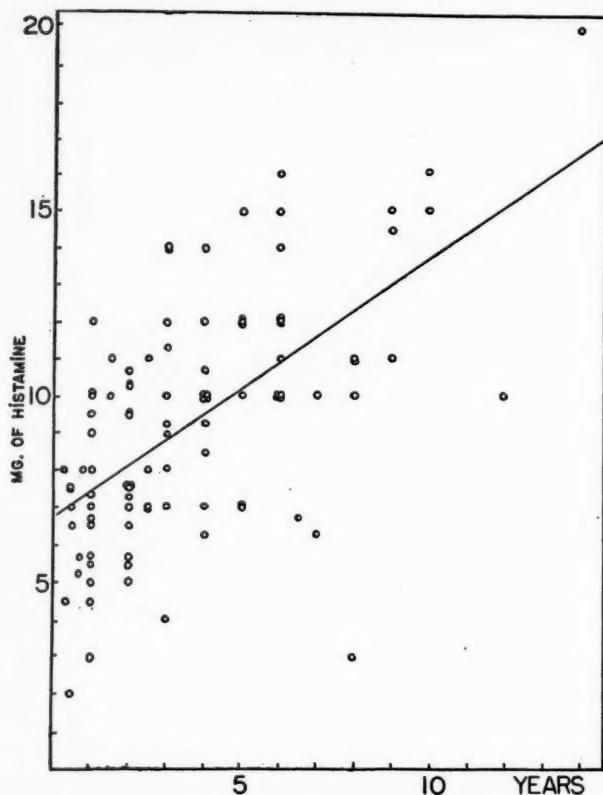


FIG. 9. Relationship between tolerance to histamine (maximum single dose tolerated during treatment, in mg. of base) and evolution of the disease. Correlation coefficient: + 0.41.

Finally, lessened responsiveness of the adrenal cortex in later years may explain why schizophrenics fail to respond clinically to increasing doses of histamine, as they respond less to other stimuli such as ACTH.^{29, 30}

The results of the present study, therefore, suggest that histamine can promote homeostatic readjustments chiefly during the phase of adrenocortical hyperactivity encountered at the beginning of a psychosis.

Since the authors' investigation was limited to carbohydrate metabolism, it should be added that there is no way of ascertaining that the physiologic patterns suggested involve the adrenal cortex *per se*. It should be kept in mind that the dysfunctions of this gland and, by ricochet, of the carbohydrate metabolism, may reflect a dysequilibrium lying at another level.

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As for histamine, the significant clinical and physiologic changes this substance produces after a course of merely 30 days of nonconvulsive therapy, strongly suggest a more thorough investigation of its potentialities in theoretic and practical psychiatry, when administered on a larger scale and/or during longer periods of time, and/or combined with more recently accepted pharmacologic agents such as reserpine and chlorpromazine.

SUMMARY

Insulin tolerance tests were used as a tentative means of appraising homeostatic disturbances and readjustments in 41 of a group of 100 schizophrenic patients submitted to a 30 day course of histamine therapy (according to the Sackler technique). Of these 41 patients, 7 had been improved with histamine alone and were discharged from the hospital; 10 had shown improvements of varying degree when histamine was followed either by thyroid, electroconvulsive therapy, and/or insulin coma treatment. (See bibliographic reference 27.)

The marked fluctuations observed in the insulin tolerance test curves following histamine treatment, emphasized the influence of this physiologic substance upon insulin imbalance, among other physiopathologic patterns demonstrable in schizophrenics. Seven of this patient group had shown clinical improvement which in this study was shown to be correlated to an increased sensitivity to insulin in place of insulin resistance in 6 patients and normal responsiveness in one patient.

The results of the study demonstrated that histamine in high dosage could indeed promote homeostatic readjustments, particularly during the phase of adrenocortical hyperactivity encountered at the beginning of a psychosis.

The significant clinical and physiologic changes obtained after a course of merely 30 days of nonconvulsive therapy, strongly suggest a more thorough investigation of the potentialities of histamine, when administered on a larger scale and/or during longer periods of time.

Analysis of the data again strengthened the belief that thorough statistical study can eliminate the oversight of differences in response during a study—differences which are often “washed out” by inclusion within means of an entire patient population. (See figures 4, 5, and 6.)

RESUMEN

Las pruebas de tolerancia a la insulina (P.T.I.) se usaron a manera de ensayo para evaluar los trastornos homeostáticos y readaptación de 41 pacientes esquizofrénicos sometidos a un tratamiento histamínico durante 30 días, (de acuerdo con la técnica de Sackler). De ellos uno se había curado y 6 mejoraron con sólo la histamina, mientras que otros 10 mostraron diversos grados de mejoría cuando la histamina fue seguida de la administración de tiroides, electrochoque o insulina o tiroídes e insulina solamente.

Las notables fluctuaciones que se observaron en las curvas de la P.T.I. después del tratamiento con histamina, destaca su influencia sobre el desequilibrio insulínico, entre otros patrones fisiopatológicos demostrables en las esquizofrenias. Siete de este grupo de pa-

cientes presentaron mejoría clínica, la cual en 6 de ellos, según este estudio, ha mostrado estar correlacionada con un aumento de la hipersensibilidad a la insulina en lugar de la resistencia a la insulina y en el restante la respuesta fue normal.

Los resultados de este estudio ponen de manifiesto, que la histamina a altas dosis puede inducir a una verdadera readaptación homeostática, especialmente durante la fase de hiperactividad suprarrenocortical que se observa al comienzo de una psicosis.

Los significativos cambios clínicos y fisiológicos que se obtuvieron después de un tratamiento de sólo 30 días con una terapia no convulsivante, hacen imperativa una más completa investigación de las potencialidades de la histamina, cuando se administre en altas dosis durante largos períodos de tiempo o sólo en el último caso.

El examen de los datos refuerza de nuevo la creencia de que un completo estudio estadístico, puede eliminar las diferencias desapercibidas en la respuesta durante un estudio, diferencias que a menudo son "pasadas por alto" cuando se incluyen dentro de los medios terapéuticos usados en una colectividad de pacientes.

RESUME

Dans le but d'apprécier l'effet de l'histamine sur la tolérance remarquable de la plupart des schizophrènes vis-à-vis de l'insuline, et possiblement sur les mécanismes de l'homéostase, des épreuves de tolérance à l'insuline furent effectuées chez 41 malades au cours d'une cure d'histaminothérapie (technique de Sackler). Cliniquement, on nota un cas de guérison et six d'amélioration avec l'histamine seule, tandis que 10 autres sujets affichèrent des améliorations à des degrés variables lorsque l'histamine fut suivie d'extrait thyroïdien, d'électrochocs, ou de comas insuliniques.

Il semble bien que l'histamine à dose élevée ait une influence, au moins sur le déséquilibre insulinique, parmi les phénomènes physiopathologiques qu'on peut mettre en évidence chez le schizophrène.

L'histamine paraît favoriser, chez les cas récents en particulier, un retour à l'équilibre homéostatique, principalement durant la période initiale d'hyperactivité corticosurrénalienne des psychoses. Il serait intéressant de connaître l'effet d'une administration encore plus intensive ou plus prolongée d'histamine.

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Neuroleptic Effects of Chlorpromazine in Therapeutics of Neuropsychiatry

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Chlorpromazine, considered first as a ganglioplegic, then as a potentiator, and finally as a "neuroleptic," has shown itself to be a drug of first importance as a modifier of the nervous system, especially of the central and peripheral neuroautonomic system. Since the beginning of 1952, the applications of this compound have rapidly extended to all fields of medicine, surgery, and obstetrics. However, the neuropsychiatric indications remain among the most important.

In our specialty, the drug is used according to various methods and conceptions. It may have something to do with the present increase in interest which is now shown in Europe concerning sleep treatment, introduced to psychiatric therapy by Klaesi some 30 years ago and brought up to date by the use of chlorpromazine in combination with barbiturates. Furthermore, as a consequence of the work of Laborit on artificial hibernation by neuroautonomic disconnection, certain investigators conceived the idea of applying this principle in neuropsychiatry.

In 1952 we studied this question and soon learned that complete hibernation, such as that practiced in surgery for instance, would have extremely limited applications in psychiatry. On the other hand, chlorpromazine by itself, as a component of the "lytic cocktail" of Laborit, seemed to offer such important possibilities in mental and nervous pathology that we have used it alone in prolonged and continuous administration. The results were such that we have adopted the method under the name neuroleptic treatment, or better, neuroleptic treatment.

NEUROLEPTIC TREATMENT

By the very nature of its continuity and duration, the neuroleptic treatment is linked to the principle of hibernation therapy, at least as far as it is opposed to shock treatments, which could be called "the body alert in its most intense form."

METHOD OF TREATMENT

Our technique is extremely simple and is currently utilized in numerous psychiatric hospitals. The neuroleptic treatment can be administered in three ways.

Intramuscular Injections of Chlorpromazine: We have recommended this method to

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obtain continuous action. Three inductions every 24 hours are made, when the patient wakes up, after the midday meal, and at bedtime. The treatment is started by one injection of 50 mg., which gives an idea of the reactions of the patient, and increased to 100 to 200 mg. daily with an average of three injections of 50 mg. per day. In principle, the duration of treatment is not limited. It depends on the gravity of the psychosis and its therapeutic evolution. Intramuscular administration is continued for an average of two to four weeks, when oral administration is substituted.

Oral Administration: The doses are regularly spaced during the day. In this case the doses are larger, 200 to 250 mg. per day. The oral route can be utilized from the start, as we do in certain departments treating neuroses, or following a series of injections. In any case, the doses indicated above require strict bed rest at the start and regular medical supervision, that is they can only be administered within the confines of the hospital.

Ambulatory or Outpatient Administration: This method can be used in very light cases on condition that the patient remains in his room at least during the first week of treatment. Oral administration alone should be used; 100 to 150 mg. should be administered per day in four to six doses of 1 tablet of chlorpromazine. The treatment should last at least two to three weeks and, if desired, doses can be decreased progressively as symptoms disappear.

In general, we abide by the following rules: The entire amount required is given on the first day. We do not give progressively increasing doses because, therapeutically, one should not underestimate the necessity of inducing immediate neuroplegia.

It is especially important to assure continuance of the treatment as certain reactions can appear if this continuity is not observed.

One should not hesitate to prolong treatment long after the disappearance of symptoms when their disappearance was progressive as it is impossible to predict the duration of treatment since this depends on the seriousness and evolution of each case. Three to six weeks constitute the average length of treatment. In cases of relapse after the treatment has been discontinued, there should be no hesitation to reinstate it even for months, in serious cases.

The matter of duration of treatment might also explain the differences in posology recommended by various early French publications, on the one hand, and the large doses recommended by many authors in America, on the other. The latter do not hesitate to make use of daily doses of 600 to 900 mg. and more, probably with the intention of obtaining better results more rapidly from the very beginning.

The neuroleptic treatment is no more a sleep treatment than it is an artificial hibernation. Occasionally, the patient goes through a phase of initial somnolence, but he soon finds himself in a very characteristic mental condition that we have called the psychic syndrome of chlorpromazine: "The apparent indifference and delay in response to outside stimulation, the emotional and affective neutrality, the decrease in initiative and preoccupations, without modification of consciousness or of intellectual faculties" constitutes that syndrome. H. E. Lehmann of Montreal, confirming these data, gave us an objective demonstration by test methods.

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At the same time one observes marked neuroautonomic modifications. The most characteristic are paleness of the face, dryness of the mouth, and variations of the pulse and blood pressure. The latter are related to the blocking of the orthostatic reflex, always observed by us, together with Y. Tardieu. This justifies the rule of bed rest, at least as long as the effect lasts.

The treatment has an antithermic effect on febrile patients. In others one can observe a slight initial hypothermia. In the process of treatment made with large doses, there are, in the temperature curves, high points lasting a few hours. These are indicative, not of infection, but of modifications in thermic regulation. The hematologic disturbances, among them a drop in the eosinophils, are purely initial and transitory. We have never been able to find, even after the longest treatment, any alterations in the red or white blood cell counts, or evidence of hyperleukocytosis, as are observed after the sleep treatments.

INDICATIONS AND RESULTS

The psychiatric applications of treatment by chlorpromazine have increased since our original investigations were made three years ago. Today our knowledge is based on almost 1,000 patients treated. The results we have obtained have been the object of a series of publications where the main indications are given in full detail (see bibliography). The most important indications remain those first outlined, they are mental disturbances of considerable seriousness. However, the effect of the treatment is not merely symptomatic. It has a real curative effect in a certain number of cases.

States of excitation and agitation are fundamental indications of this therapy. The most remarkable effect is, without doubt, the change that has taken place in the entire atmosphere of these hospital wards. In a few hours, in a few days at the most, the patients are calmed without being somnolent. Today the neuroleptic treatment is the treatment of choice in manic states, usually little influenced by electroshock or sleep treatment. Phases of excitation which characterize the evolution of psychoses and periods of agitation in schizophrenics are nearly always controllable. Aggressiveness and impulsiveness are symptoms which are generally favorably influenced.

Mental confusion, acute and subacute psychoses, even if accompanied by fever and hyperazotemia, react remarkably well. The rapid action of the drug in states of mental confusion is noteworthy. Subacute alcoholic reactions deserve special mention, since they can be stopped if action is taken early enough. Strychnine in its usual doses can be combined without danger.

States of anxiety, depression, and melancholia react differently. Anxiety nearly always responds remarkably well to the action of chlorpromazine. It can cure simple or neurotic depressions and certain melancolias, especially presenile melancolias. True melancholia, wherein anxiety and insomnia are relieved by chlorpromazine, often remains an indication for shock treatments, but the number of electroshocks can be decreased by concomitant use of the neuroleptic treatment. The latter treatment can have a preventive effect, or more exactly an abortive effect, if it is applied at the beginning of the manic-depressive psychosis.

Concerning delirious and hallucinatory psychoses one might say that transient "episodes

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of delirium" like certain protracted periods of delirium, are often reduced just as easily by chlorpromazine therapy as they are by electroshock. Hallucinatory psychoses and chronic delirium react much less favorably, though extended use of the treatment in psychiatric institutions has shown remarkable improvements in severe, chronic cases.

Schizophrenia often requires a special posology. It may be necessary to administer double doses, or doses twice as large as those we have previously mentioned. The phases of agitation or anxiety can be reduced, as can also impulsiveness and aggressiveness when they are present. But most important, in the great majority of cases it is the improvement in the rapport of the patients, which opens up new possibilities for psychotherapy and ergotherapy. Such improvements are noted in the diverse forms of the disease which include the paranoid form, although one cannot speak of complete cure. Insulin therapy, nevertheless, is still very valuable in many indications. In regard to the application of this treatment in the field of psychoneuroses, it would seem that anxiety neuroses and phobic neuroses react infinitely better than obsessive neuroses.

Patients suffering from psychasthenia experience an improvement in their depressive symptoms, in their anxiety or hypochondria, rather than in the asthenia itself, which may be aggravated.

Neuroses of insomnia react very well to chlorpromazine, either used alone or with Phenergan or barbiturates. The somatic manifestations of hysteria and the hypochondriac syndromes of various origins, usually so discouraging for the physician, are often very much improved by the neuroleptic treatment.

This led to treat the so-called psychosomatic disorders, which we limit to the disturbances appearing in neurotic individuals as a result of a visceral miopragia, itself frequently related to neuroautonomic disorders. In this case, the neuroleptic treatment is doubly effective acting on the psyche on the one hand and effectively reducing the somatic manifestations on the other. This led us to report the results obtained in arterial hypertension associated with great anxiety, in ulcerous syndromes brought about by afflicting preoccupations, in obsessive neurodermatitis, and in the postoperative dysurias of neuropaths. The painful spasmodic manifestations accompanied by pruritus or irritation in obsessed, anxious or pusillanimous neurotics are a fairly vast field of application.

In a general way it can be said that the treatment has a good effect on psychopathologic states accompanied by an increase in nervous and mental tension, and less effect on those accompanied by a decrease of psychologic tension, such as psychasthenia. Before considering more recent neurologic indications, it is necessary to discuss the relation of the neuroleptic treatment to sleep treatments and to artificial hibernation.

Concerning the psychoses, a comparison of the results obtained by various authors is very clearly in favor of chlorpromazine used alone. Manic states, for instance, frequently recur after sleep treatment, while chlorpromazine has truly changed the atmosphere of the psychiatric wards for agitated patients and has eliminated the need for methods of restraint.

In the treatment of neuroses, one must realize it is important to make the patients sleep in order to put an end to their preoccupations. Frequently, however, it is sufficient to induce a sleep of short duration by adding very small quantities of barbiturates to help

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the patient accept his treatment. In the final analysis the results appear to be as good as those obtained with a prolonged sleep treatment without the serious drawbacks of the latter. The prolonged sleep treatment, nevertheless, has its indications, particularly during the detoxification of drug addicts and in some cases of paranoic or hypersthenic hypochondriacs.

It seems to us that artificial and complete hibernation, as proposed by Laborit, has its indications in the rare and extremely serious cases of our specialty: acute delirium at its height, confirmed delirium tremens, and post-therapeutic coma in the Sakel cure. Equally interesting are the indications of the shock treatments and of the treatment which is designed to put the nervous system at rest.

Considered from this aspect, the case of manic-depressive psychosis is remarkable: Chlorpromazine has become the treatment of the manic episode, in the same way that electroshock has become the treatment of the depressive phase. The results obtained by seismotherapy were as irregular in mania as those of chlorpromazine were in depression. The association of these methods is possible and in many cases necessary. It would seem that the number and the intensity of the shocks can be decreased in those patients suffering from melancholia if they have been treated with chlorpromazine. Three or four treatments with electroshock, even intravenous injection of magnesium sulfate, associated with the neuroleptic treatment are often sufficient to bring an end to the melancholia.

NEUROLOGIC APPLICATIONS

Although these applications have less scope, they are extremely important from the point of view of neurophysiology.

The various choreas offer an interesting field. Chlorpromazine would seem to have an outstanding curing effect on Sydenham's chorea. However, we prescribe anti-infectious medication with it. In chronic choreas one generally obtains a symptomatic effect which is not negligible. In Parkinsonism, chlorpromazine does not have any curing action, though Canadian investigators have shown that the rhythm of the tremors and the stiffness is always reduced. This is an important factor in understanding the neurologic action of the drug.

The Italians have noted good results in the treatment of hemiballism and spasms of torsion. We have also had good results in certain patients affected by tics.

Concerning epilepsy, the drug seems to have no effect on convulsive seizures though spectacular results have been reported in the treatment of confused states. M. David and his co-workers have recommended chlorpromazine used intravenously in epileptic states. This is comparable to the effect of artificial hibernation on eclampsia. Artificial hibernation has been proposed in the treatment of coma resulting from carbon monoxide and even in cases of coma caused by barbiturate poisoning (H. Benard).

The application of the neuroleptic treatment applied to pain remains to be considered. Many tests now being made in France and the United States seem most encouraging even in pain of cancer.

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INCIDENTS AND REACTIONS OF THE TREATMENT

Narcotherapy, as recommended by Swiss investigators, presented dangers attributed to the prolonged intoxication caused by the drug. Modern sleep treatments made with potentiated drug combinations are less toxic but, nevertheless, do not completely eliminate the drawbacks of prolonged sleep which are far from being negligible. These reactions do not occur during neuroleptic treatments probably because the sleep they induce is normal. The very few cases of infection, noted in our first publications and ascribed to the anti-phlogistic action of the drug, have never occurred again. The main reactions were ascribed to postural hypotension during the first days if the patients got up prematurely. These reactions are easily overcome by making the patient lie down and justify bed rest. Neuro-autonomic disorders such as tachycardia and palpitations may, in certain neuropaths, require administration of small doses of sedatives for short periods. The acidity and the irregular resorption of the injectable drug may cause minor local irritations, but no abscesses.

When this treatment is used on a large scale, it has one drawback which should not be underestimated: reactions of the skin and the mucosa affecting the nurses handling chlorpromazine. These occur more frequently in women than in men, and probably more often in individuals already affected with allergic reactions. They consist of acute and subacute eczema of the face and hands, in blepharitis, all reactions which appear early on sensitive individuals and which have never been seen after a period of prolonged use. One seasonal factor due to photosensitivity has been noted. This seems to occur especially in the injectable form of the product.

Among the rare reactions also attributed to chlorpromazine, one must mention hepatitis and vascular accidents. Hepatitis especially has been observed on the American continent though we have only seen 2 cases of it out of 1,000 patients treated. It has been observed more frequently by the Swiss authors, who make use of large doses of chlorpromazine, and it is probable that the amount given influences the occurrence of hepatitis. It is believed that vascular accidents are caused by interrupted treatment. We had the opportunity of observing 2 cases of phlebitis of which one was obviously due to the treatment. Both occurred during interrupted treatments and were followed by small pulmonary infarcts.

However, during treatments administered with the recommended precautions, we never observed any untoward reactions. This seems to be due to regular supervision of the patients and to continuity of treatment. It is known that any neuroautonomic drug can, in certain cases, bring about unexpected reactions—reactions which are suppressed or decreased by prolonged, continuous action.

HYPOTHESES CONCERNING THE MODE OF ACTION

The mechanism of action of chlorpromazine is complex, probably multiple, and has given rise to hypotheses which are more or less contradictory or complementary. Starting with the laboratory investigations, they are as follows: First, we know that this drug constitutes the essential element of Laborit's "lytic cocktail" which has enabled him to bring about artificial hibernation by neuroautonomic disconnection.

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Pocidalo, studying the result of excitation of the central extremity of the vagus nerve in the dog treated by chlorpromazine, speaks of "total chemical sympathectomy." To this can be compared the findings of A. Castaigne in experimental endocrinology wherein there is mentioned a "chemical hypophysectomy." Peruzzo has observed *in vitro* a decrease of oxygen metabolism especially marked in cerebral tissue. Particularly interesting are the studies of Dell and his co-workers, who have compared the effect of the drug with those obtained by Magoun, who studied the physiology of the reticulated substance of the mesodiencephalon with the electroencephalograph. Dell explains the action of chlorpromazine by its effect on sleep and by the decrease of the peripheral neuroautonomic tone. Decourt notes that sleep is not constant, and that it is impossible to obtain in the guinea pig, but that chlorpromazine produces a lethargy, which he calls "narcobiosis," even among the unicellular organisms.

In man, the various electroencephalographic studies seem to indicate that the drug, unlike the barbiturates, brings about a state of sleep which is hard to differentiate from physiologic sleep. It should be noted that most of the previous experiments study the action of the drug in the initial phase of sleep or somnolence, whereas this is perhaps not its most characteristic effect any more than is the thermic effect.

For this reason it may be useful to gather data which has been given us by clinical observation. The first thing to note is that patients are not put to sleep. We have seen that the psychic syndrome brought about by chlorpromazine is very special, and that it is apparently characterized by a slowing down of perceptions, and by a weakening of these same perceptions as expressed by "lack of interest." Also, reactions in general are weak and delayed without any changes in the faculty of cognition. Emotional tone is at its lowest ebb. Furthermore, patients thus treated show a constant block of the orthostatic reflex as well as a series of indisputable neuroautonomic modifications. Thermic regulation is affected.

From the point of view of physiopathology, it should be noted that the psychiatric disorders most affected by this treatment are those which have been related to the pathology of the gray matter of the brain stem, such as disturbances in mood and changes in consciousness during waking hours. Chlorpromazine has also proved active in neurologic states related to mood and changes in the corpus striatum.

At present it is impossible to conclude with certainty the true mode of action of this drug. However, it does seem to have a neuroleptic action which exerts its effect mainly on the central and peripheral neuroautonomic system.

In a study of biologic reactions common to the different methods of shock treatment used in psychiatry, we have drawn particular attention to the principal processes involved in the alarm and defense reaction and its various forms described by Cannon, Hoff, Reilly, and Selye. This implicates a central mechanism and, in our opinion, it is at the diencephalo-hypophyseal level that the shocks, whether biologic or psychologic, exert their impact. It was logical therefore that we should investigate any therapeutic methods by which the nervous system, particularly the autonomic cerebral centers, could be brought to rest, and whether it was possible to interrupt the irritative or reactional process which may constitute the background of the mental disease, or even the disease itself.

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RESUMEN

La clorpromazina es de la mayor importancia para modificar la actividad del sistema nervioso, especialmente del sistema autonómico. Un ensayo en casi 1.000 pacientes ha producido buenos resultados en los casos de excitación y agitación. La confusión mental y las psicosis agudas y subagudas reaccionaron muy bien. En general, esta droga es eficaz en los síndromes psicopatológicos, acompañados de aumento de la tensión nerviosa y mental y es menos eficaz en estados como la psicastenia.

Las indicaciones neurológicas de la clorpromazina incluyen los diversos tipos de corea. Se han obtenido resultados alentadores en el tratamiento neuroléptico aplicado al dolor. Las reacciones a esta droga incluyen taquicardia, reacciones cutáneas, hepatitis y accidentes vasculares. Se emiten varias hipótesis sobre la forma de acción de esta droga.

RESUME

La chlorpromazine est d'une grande importance pour modifier le système nerveux, en particulier les systèmes central et neuroautonome périphérique. Dans une série de près de 1.000 malades, elle a produit de bons résultats dans des états d'excitation et d'agitation. La confusion mentale et les psychoses aiguës et subaiguës réagissent remarquablement bien. En général, la drogue est efficace dans les états psychopathologiques accompagnés de tension nerveuse et mentale augmentée, et moins efficace dans les états tels la psychasténie.

Les usages neurologiques de la drogue comprennent le champ des diverses chorées. Quelques résultats encourageants ont été obtenus dans le traitement neuroleptique de la douleur. Les réactions comprennent occasionnellement la tachycardie, des effets dermiques, l'hépatite et des accidents vasculaires. Plusieurs hypothèses sur le mode d'action de la drogue sont présentées.

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Chlorpromazine in Psychiatry

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The following is a summary of our experience with chlorpromazine. This compound has been used for the past two years at the Psychiatric Hospital of Lyon, an institution of 2,200 beds for adults and children of both sexes suffering from various kinds of nervous disorders. More than 4,000 patients have been treated with chlorpromazine in the seven wards of this hospital.

Observations will be limited solely to psychiatric cases, since we have treated too few neurologic cases to draw any conclusions. After reviewing successively the evolution of this therapy, the different methods of administration of the drug, and the reactions it has produced, we shall consider its use in the different categories of patients treated in the hospital, and conclude with the impressions gained from the use of this treatment.

EVOLUTION OF CHLORPROMAZINE THERAPY

The use of chlorpromazine in psychiatry was inspired by the work of Laborit and his co-workers on artificial hibernation rather than by the work of the neurosurgeons. During the course of the first year, we used doses varying from 25 to 200 mg. per day. The compound was remarkably well tolerated; reactions and accidents due to orthostatic hypotension which we feared did not materialize. On the other hand, there were several attempts at suicide with very high doses (60 tablets of 25 mg.) resulting in a simple autohypnotism which proved reversible without any complications.

The various states of agitation responded remarkably well to treatment. Considering the facts already mentioned, we decided to increase progressively the daily doses, particularly in cases of hebephreno-catatonia and paranoia. In these cases, we are currently using 600 mg. per day and sometimes up to 1 Gm. of chlorpromazine. Certain catatonics who had not been modified by the first doses were finally unblocked with doses of 600 to 800 mg. per day.

POSOLOGY

The 25 mg. tablet is the most currently used form of chlorpromazine. In most cases patient acceptance is excellent. We prescribe two to four tablets per day; for larger doses, a 100 mg. tablet is preferable.

Translated from the French by Paul H. Pazery, Philadelphia, Pennsylvania.

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B. BROUSOLLE

The injectable form of chlorpromazine, contained in ampuls, is used in instances where patients refuse tablets and also in cases of emergency, for instance, in the course of the manic episode. Both intramuscular and intravenous injections are used. In cases of intense agitation, which exhaust the patient and the people around him, we often administer, initially, a barbiturate of the type of sodium amytal to produce a so-called starter anesthesia which enables us to set up an intravenous drop-by-drop administration of chlorpromazine. We dilute 50 mg. of chlorpromazine in 250 cc. of isotonic solution to be absorbed in approximately two hours. This perfusion is repeated once or twice a day for three to five days after which intramuscular injections are substituted. But intramuscular injections, repeated three times a day, become painful after a while and cause indurations at the end of 6 to 15 days, according to the doses used and individual sensitivity. Treatment with tablets is then instituted and maintained for a long time, up to several months. Premature discontinuance of the treatment can bring about a recurrence of the disorders.

Certain patients prefer the compound in syrup form, in which instance the same doses are used. Chlorpromazine in suppository form is indicated in cases of gastric intolerance and when intramuscular injections become too painful. We abandoned the sublingual method of administration after a few trials. The doses it permitted were too small and it was often poorly accepted.

The management of patients on chlorpromazine differs widely from one individual to the other. Doses vary between two extremes: 25 mg. and 1 Gm. We frequently start with 100 mg., increasing this to 300 or 500 mg. on the fifth day. When the desired effect is obtained, we decrease the doses progressively, for instance by amounts of 50 mg. each week. The so-called inhibition syndrome varies considerably with individuals, certain patients must remain in bed with doses of 100 mg. while others can go to the Department of Occupational Therapy even after doses of 800 mg.

REACTIONS

Chlorpromazine may give rise to reactions of the skin among nurses constantly in contact with the product, especially during the first year. These cases of eczematous contact dermatitis start on the hands and can affect the forearms, the neck, and the legs. The reactions which occur in subjects with a neuroarthritic heredity cannot be overcome by the usual methods of desensitization. They vanish completely and rapidly when the patient ceases to be in contact with the allergen. These reactions are becoming rare at the present time, as if a tolerance had developed among even the most sensitive nurses.

Among our patients, we have noted only a few rare cases (of sensitization); erythemas and eczemas have occurred in parts of the body which remain uncovered, probably due to a mechanism of photosensitization. In their original form, the tablets often caused burning sensations in the stomach; these are rarer now that the tablets are coated. Now and then we see sharper reactions—nausea and even vomiting—in which cases we make use of a different method of administration.

The orthostatic syncopes generally take the form of vertigo or sensations of inebriation

CHLORPROMAZINE IN PSYCHIATRY

and headaches; paradoxically enough it would seem that these reactions occur especially with the smaller doses of 50 to 100 mg. We are not considering the sinusoid tachycardias which occur frequently at the higher doses but which are well tolerated by the patients. In the same way certain Parkinson-like syndromes are rarely indications for discontinuing treatment. They cease completely once the treatment is stopped. We have observed a few rare cases of hepatitis and edemas of Quincke which disappeared when the doses were reduced.

Chlorpromazine administered intramuscularly sometimes brings about high points in the temperature curve, and also phenomena of inflammation, such as redness of the skin, induration, and pain which are always reversible. Thresholds of tolerance vary considerably with each individual. We also wish to point out the relatively good tolerance of the product which has practically no dangerous threshold.

RESULTS

States of Excitation. States of excitation are the main indication for chlorpromazine. Complete control of psychomotor agitation is obtained by combining chlorpromazine intravenously and intramuscularly, eliminating the need for restraints, which are so hard on the patient.

The patient admitted in a state of frenzy, vociferating and gesticulating, finds himself in a few hours in a state of complete calm and rest. He stays in bed, almost motionless, and without showing the frightening symptoms of a coma or a complete paralysis. He is overcome by a kind of somnolence accompanied by a beneficial lassitude of which he is perfectly conscious and which is rarely unpleasant to him. The physician can then make use of psychotherapy in his conversation which was initially rendered impossible by the flight of the patient's ideas.

Chlorpromazine acts remarkably well in all conditions of secondary excitation found in various psychotic and neurotic states, but it is also effective in states of manic agitation, so refractory until now to biologic therapy. Sometimes the episode seems literally nipped in the bud, other times it is merely slowed down and premature discontinuance of the drug would bring back the symptoms. It is generally necessary to use large doses to treat manic episodes. It can be said that out of 4,000 treatments given in our hospital, 1,500 were prescribed to overcome excitation states.

Chlorpromazine has greatly contributed to transforming the atmosphere of psychiatric hospital wards; it is an important factor in relaxation and return to normal.

Depressive States. The effect of this compound on depressive states is more controversial. In our experience at the Vinatier Hospital, chlorpromazine was effective in moderate cases of depression and anxiety. However, it cannot overcome serious cases of anxiety nor episodes of melancholia, where electroshock remains the treatment of choice.

Schizophrenia. Most of the schizoprenics at Vinatier hospital, about 1,000, have been treated with chlorpromazine. It has a remarkable effect on the catatonic and paranoid syndromes. We have already witnessed the literal "resurrection" of several dozen catatonics.

In a few months, with average doses of 600 mg., we observed a progressive disappearance of inhibitions and a renewal of psychomotoricity. But the effect is not permanent and the patient must continue treatment once he has left the hospital or the phenomena of blockage will recur and the inhibitions reappear.

In the paranoid forms, which account for approximately 30 per cent of the schizophrenics in the hospital, numerous instances of spectacular disappearance of delirium have occurred. Autism, incoherent and delirious confusion, and symbolic disguises disappeared simultaneously. In certain patients, there seemed to be a constant relationship between the lessening of the morbid state and the quantity of drug absorbed. These fluctuations, probably related to variations in the mechanism of waking and sleeping, were reflected in the electroencephalograms. But in this group also we are obliged to continue medication or to reinstitute it periodically.

We prefer the Sakel* treatment in schizophrenias of the dementia praecox type.

Chronic States of Delirium, Paranoias. We treated approximately 500 paranoiac patients with chlorpromazine. Patients with well-established deliriums are usually refractory to medication, particularly difficult were those with hallucinatory disturbances. Nevertheless, improvements in behavior are obtained, preventing episodes of agitation and anxiety. We had the satisfaction of controlling the disturbances of 3 severe paranoiac patients in our own department. These 3 patients had been placed in three separate buildings where they dominated the whole environment with their powerful personalities, multiplying conflicts, making life impossible for co-patients, and sabotaging all social therapy. They received intensive treatment with maximum doses and were kept apart for two months. This brought about an improvement in the interrelations between each building and promoted the creation of new traditions and a new atmosphere to which, afterwards, the 3 severe paranoiac patients had to adapt themselves.

Epilepsy. Generally speaking, chlorpromazine aggravates epileptic disturbances and increases the frequency of episodes. However, we have seen the disappearance, both clinical and electroencephalographic, of the signs of grand mal in one of our patients who was treated exclusively with chlorpromazine for two years with a daily dose of 100 mg.

Psychoses of Short Duration. The polymorphic delirious episodes or schizophrenic episodes are shortened, especially when agitation and incoherence of the delirious ideas dominate. We reserve opinion concerning episodes of primitive mental confusion for which we have frequently associated electroshock and chlorpromazine. We treated acute febrile delirium successfully by inducing a state of hibernation.

Alcoholism-toxicomanias (drug addiction). We found chlorpromazine to be a useful adjuvant medication in various forms of alcoholism which give rise to mental symptoms; we reserve it for those cases whose mental background presents a component of marked excitation.

We have no experience in the field of toxicomania as such cases have been extremely rare in the hospital.

* Insulin shock therapy.

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Psychopathic Personalities, Behavior Disorders. Chlorpromazine has been used at Vina-tier on about 100 patients of this type. We have also used it at the psychiatric annex of the Lyon Prisons. These patients have a remarkable lability of mood and this medication is very beneficial during phases of agitation and aggressiveness, and episodes of depression and anxiety. The fundamental nature of the problem is unchanged but episodic treatment can avoid many conflicts and even untoward actions.

Senile Dementia. In the same manner as many psychiatric hospitals, the Psychiatric Hospital of Lyon is crowded with geriatric patients who are senile and for whom a better organized public health department could avoid institutionalization. The wards contained about 14 per cent of these senile patients. Chlorpromazine, administered to 300 of those who were agitated, especially at night, gave good results to all. However, the fundamental dementia remained unchanged.

Pediatric Neuropsychiatry. States of agitation and impulsiveness come under the scope of chlorpromazine. However, it did not seem to us that it helped excited and distracted children to study in school in any way, even when it did prevent the flight of ideas. Doses used for children less than 8 years of age are 25 to 50 mg.; for children from 9 to 15 years of age, we never administer above 150 mg.

REMARKS

In this short review, we have not covered all psychiatric fields. In particular, the experience we have had in this hospital does not include the large group of narcotic addicts that makes up the bulk of patients seen by the general practitioner. We have not considered the group of retarded and feeble-minded persons who nevertheless make up about 18 per cent of the patients, but by taking into account their main symptoms we have included them in one of the categories previously mentioned. These patients were classified according to the state that predominated, whether it was a state of depression or excitation, a condition of delirium or disassociation, or epilepsy. We have not found that chlorpromazine had any effect on retardation itself. The drug seems to act in two fields, apparently distinct but in reality closely linked: the one is kinetic, the other nyctoemeral. Chlorpromazine acts on psychomotoricity; it inhibits it in states of excitation and liberates it in states of inhibition. In catatonic and paranoid states it is both a therapy and a fascinating experiment at the same time. One has the impression, and this is confirmed by the electroencephalogram, that it modifies the threshold levels of sleep and waking. The paranoid deliriums, which it suppresses, are only colorful and luxuriant reflections of phases of sleep or degrees of hypnosis. Paranoiacs with fantastic deliriums and catatonics with desperately rigid attitudes are "sleeping patients" that chlorpromazine "wakes up" or brings to a superior degree of lucidity. Yet the action of this drug in no way recalls the action of hypnotogens or classical stimulants.

These few figures give some idea of the quantity of chlorpromazine used during the last two years in the hospital.

	1953	1954
Ampuls of 5 cc. at 25 mg.	17,400	65,278
Ampuls of 2 cc. at 50 mg. (i.v. inj.)	9,000	7,732
Tablets, 25 mg.	132,000	791,867
Suppositories, 100 mg.	0	23,250
Drops, bottles 10 cc.	0	2,300

We began to use suppositories in April, 1954, and chlorpromazine in drops, November 5, 1954.

CONCLUSIONS

Chlorpromazine is a new advance in the progress of therapeutics, a milestone just as important as electroshock was about 10 years ago. Two years of intensive experience have led us to increase considerably the range of dosage and shown how well the drug is tolerated. Its indications seem to be getting more defined. Chlorpromazine acts remarkably well on psychomotor agitation, whether it be a component of a syndrome or whether it is in itself an entity, by which we mean manic episodes and, to a certain extent, anxious melancholias, and in cases where the waking state is partly disturbed, particularly in catatonics and paranoid.

The results of this therapy are also being felt in the psychiatric ward considered as an aggregate. As it reduces both individual and collective agitation and aggressiveness, it contributes to the improvement of the ward atmosphere. Occupational therapy and all social therapies can be increased to the great advantage of all the patients and also for the greater benefit of the nurses and personnel.

SUMMARY

Within the confines of a psychiatric hospital of 2,200 beds, 4,000 patients had been treated with chlorpromazine for the last two years. With use, posology has been increased to doses ranging up to 1 Gm. per day, often necessary in manic episodes and in catatonic patients. The compound is remarkably well tolerated and reactions are minimal.

The advent of chlorpromazine is of considerable value in states of excitation of varied etiology and supersedes the usual methods of sedation. It is also helpful in moderate cases of anxiety. Lastly, in the field of schizophrenia, it brings about spectacular pacification in paranoiac and catatonic states. It has little effect on serious depressive cases and no influence in states of mental deficiency or deterioration. Its inhibitory effect on psychomotoricity is perhaps due to its general action on metabolism. It would also seem to be effective on catatonic phenomena and paranoid thought disturbances by modifying the thresholds of sleeping and waking.

Chlorpromazine has greatly helped to bring about an atmosphere of peace and quiet in the wards of this Psychiatric Hospital and has enabled physicians to increase the use of occupational therapy in their attempts to return patients to a normal life.

CHLORPROMAZINE IN PSYCHIATRY

RESUMEN

En un hospital para enfermos psiquiátricos, con 2.200 camas, se han tratado durante los dos últimos años 4.000 pacientes con clorpromazina. La posología, de este medicamento, ha sido aumentada a dosis hasta de 1 gm. por día, dosis ésta frecuentemente necesaria para los pacientes catatónicos y con episodios maníacos. La clorpromazina es notablemente bien tolerada y sus reacciones secundarias son mínimas.

La clorpromazina es de considerable valor en los estados de excitación de diversa etiología y sobrepasa los métodos corrientes de sedación. Constituye también una gran ayuda en los casos moderados de ansiedad. En el campo de la esquizofrenia, la clorpromazina calmó de un modo espectacular los estados paranoicos y catatónicos, ejerciendo muy poco efecto en los casos graves de depresión y no influenciando los de deficiencia o deteriorización mental. Su efecto inhibitorio sobre el sistema psicomotor es quizás debido a su acción general sobre el metabolismo. La clorpromazina también parece ser eficaz sobre el fenómeno catatónico y los trastornos del pensamiento en paranoicos, modificando los umbrales del sueño y del despertar.

La clorpromazina ha sido de gran ayuda para crear un ambiente de paz y quietud en las salas de este hospital psiquiátrico y ha permitido a los médicos aumentar la ergoterapia con el propósito de hacer retornar a los pacientes a la vida normal.

RESUME

Dans les confins d'un hôpital psychiatrique contenant 2.200 lits, 4.000 malades furent traités par la chlorpromazine pendant les deux dernières années. La posologie fut augmentée jusqu'à 1 g par jour, souvent nécessaire dans des épisodes de manie et de catatonie. Le médicament est remarquablement bien toléré et les réactions sont minimes.

La chlorpromazine est d'une valeur considérable dans les états d'excitation avec étiologie variée et elle est préférable aux méthodes usuelles de sédation. Elle est aussi utile dans les cas d'anxiété modérée. Finalement, dans le champ de la schizophrénie, elle amène une pacification spectaculaire dans les états paranoïdes et catatoniques. Elle a peu d'effet sur les cas de dépression sérieuse, et n'a aucune influence dans les états de déficience ou déterioration mentale. Son effet d'inhibition sur le mécanisme psychomoteur est probablement dû à son effet général métabolique. La drogue paraît aussi être de valeur dans les phénomènes catatoniques et les perturbations paranoïdes en modifiant les limites du sommeil et de l'éveil.

La chlorpromazine a aidé beaucoup à amener une atmosphère de calme et de paix dans les salles de cet hôpital psychiatrique et a permis aux médecins d'étendre l'usage de la thérapeutique de réhabilitation dans leurs efforts de rendre les malades à une vie normale.

The Conditioned Reflex in Hypnotic Age Regression

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There has been considerable debate as to the actuality of hypnotic age regression. In summarizing the literature, Le Cron¹ concluded that the most convincing evidence comes from tests of neurophysiologic functions that are not under conscious control. The work of Gidro-Frank and Bowersbuch,² who demonstrated an alteration in the plantar response in hypnotized subjects regressed to an infantile level, has aroused considerable interest. In a previous paper³ we tested the hypothesis that there might be changes in cerebral physiology accompanying the psychologic phenomena of hypnotic age regression by comparing the encephalographs of normal subjects before and during regression. Although no alterations of cerebral physiology during hypnotic age regression were discovered by this method, it was felt that further investigation using other approaches was indicated.

An interesting approach was presented in Le Cron's paper⁴ on the loss during hypnotic age regression of established conditioned reflexes. In his experiment the hand withdrawal and the corneal reflexes were conditioned to the sound of a buzzer. In both cases, the conditioned reflex was lost under hypnotic age regression. Since only 4 subjects were used, he considered his results merely indicative rather than conclusive.

The present work was undertaken with the purpose of testing the actuality of hypnotic age regression by further and more extensive studies of what happens to conditioned responses during hypnotic age regression. It was thought particularly important to use an involuntary reaction because the assumption that any conditioned reflex is theoretically uncontrollable is questionable. It seems doubtful that a conditioned reflex in which purely voluntary reactions are involved cannot be modified or controlled by strong suggestion. With this in mind it was decided to condition both a voluntary and an involuntary response.

MATERIALS AND TECHNIQUE

The 12 experimental subjects in this study included nursing students, medical students, and ambulatory psychiatric patients. All of the subjects were volunteers and all had been hypnotized in the past by the writers either for experimental procedures or for therapeutic reasons. Although the subjects were familiar with hypnosis, they were naive concerning the method and goal of this study.

The subjects were always seen individually in the same room and in the presence of two or more observers. The subject was seated comfortably in a chair and was given the following instructions. "This is a study involving medical hypnotism. Since a very deep state of sleep will be required of you it will be necessary that we work together for several sessions in order that you may attain a somnambulistic trance." Each person was then

THE CONDITIONED REFLEX

hypnotized over a period of time until he manifested the signs found in a somnambulistic state described by Wolberg.⁵

In the first part of the study, 6 of the subjects were conditioned to withdraw the hand with a sound stimulus. The conditioning procedure was as follows: while seated in a chair an electrocardiographic electrode was attached to the right leg and the person's right hand was placed palm down on a large metal plate. This completed a circuit which was attached to a "Varitran" transformer, model V-1. A tape recording was then introduced into the experimental procedure. This recording consisted of a series of intermittent buzzing tones. The tone (conditioned stimulus) lasted for five seconds followed by a 10 second period of silence. One second following the initial sound of the tone the subject received an electric shock (unconditioned stimulus). The shock was of sufficient intensity for the subject immediately to withdraw his hand from the plate. The individual's right hand was again placed on the metal plate at which time the conditioned stimulus (the tone) was presented, followed one second later by the unconditioned stimulus (the shock). This process continued until each individual was conditioned to withdraw his hand at the sound of the tone.

In the following session the conditioned subjects were hypnotized to a somnambulistic state. The operator then placed the electrode on the subjects' right leg and the right hand was placed on the metal plate. The conditioned stimulus was presented three times to the sleeping subjects and observations were recorded. The subjects were then regressed to a period of time one month prior to the experimental procedure. The genuineness of the regression was evaluated both in terms of intellectual changes and affective expression. After regression was established, the conditioned stimulus was again presented.

In the second part of the study, the eyelid reaction of 6 other subjects was conditioned in the following manner: The subject was seated directly in front of a small table. On top of the table there was a chemical stand with a movable attachment to which a piece of plastic tubing was secured. The tubing was adjusted so that the open end was approximately one inch from the subject's right eye. The end of the tube was connected to a sphygmomanometer bulb. One second following a slight tap on the right wrist by the operator (conditioned stimulus), the patient received a puff of air in the right eye (unconditioned stimulus). In each case the response was a rapid blinking of the eyes. This process continued until the rapid blinking of the eyelids was conditioned to the tapping of the wrist.

In the following session, these conditioned subjects were placed in a somnambulistic trance. With the eyes open, the conditioned stimulus was presented. The subjects were then regressed to a period of time one month prior to the experimental procedure. After it was made reasonably certain that regression had occurred, the conditioned stimulus was again presented. For reasons that will be discussed later, the regression was continued to various earlier stages of childhood and infancy, at which points the conditioned stimulus was applied.

RESULTS

All 12 subjects responded to the conditioned stimulus under hypnosis as they had in the normal state. In other words, hypnosis did not in any way alter the conditioned response.

However, in the 6 subjects conditioned to withdraw the hand with the sound of the buzzer there was a complete loss of this conditioned response during hypnotic age regression.

The opposite reaction occurred in the 6 subjects with the conditioned eyelid reflex. All 6 of the subjects retained the blinking response when the conditioned stimulus was applied during hypnotic age regression. This was true no matter to what age level the subjects were regressed. In all cases it was made certain that "genuine" regression had occurred not only by noting intellectual functioning but also by having the subject relive emotional experiences of that age.

DISCUSSION

In the experiments in which voluntary movements were concerned (the hand withdrawal reflex) the results agree very closely with those of Le Cron,¹ there was a loss during hypnotic age regression of an established conditioned reflex. However, the second group of experiments suggests that, in the case of involuntary movements, the conditioned reflex is not affected by hypnotic age regression. It would seem that psychologic processes can alter or interfere with conditioned voluntary movements. A possible explanation of our findings is that the subjects somehow "knew" what was expected of them under hypnotic age regression and, in the case of a voluntary movement, were able to comply with that expectation. Regardless of the explanation, the indications are that in human beings some so-called conditioned responses can be controlled. Consequently, the disappearance of a theoretically controllable reaction during hypnotic regression is not necessarily evidence that a neurophysiologic change has occurred. On the other hand, the fact that a less controllable reaction (the eyelid reaction) did not, when conditioned, disappear under hypnotic regression, suggests that there were no neurophysiologic changes in hypnotic age regression insofar as could be determined by the method used in this study.

This does not, of course, prove that there are no neurophysiologic changes in hypnotic age regression. It is doubtful that a study of the fate of conditioned responses could contribute much to the understanding of this problem, since the neurophysiology of conditioned responses is not well understood. In a sense, this type of investigation probably contributes as much to the understanding of the neurophysiology of conditioned responses as it does to that of hypnotic age regression.

At this point it seems to us unnecessary to establish neurophysiologic changes in hypnotic age regression in order to demonstrate its reality. Although we intend to make further studies in this area, we doubt if any comprehensive understanding of the neurophysiology of hypnotic age regression can be gained until we have a better understanding of the neurophysiology of psychologic processes in general.

SUMMARY

The purpose of this study was to test the reality of hypnotic age regression by determining the fate of established conditioned reflexes during regression. In 6 subjects a voluntary movement (hand withdrawal) was conditioned; in 6 other subjects a less voluntary response (eye-

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lid reaction) was conditioned. In the former group, the conditioned response was lost during hypnotic age regression; in the latter group, there was no change in the conditioned response during regression. It was concluded that the study of established conditioned responses during hypnotic age regression furnishes no neurophysiologic proof of the reality of this phenomenon.

RESUMEN

El propósito de este estudio fue ensayar la real acción hipnótica en la regresión de la edad determinando durante la regresión la suerte de los reflejos condicionados ya establecidos. En seis individuos se condicionó un movimiento voluntario (retirada de la mano); en otros seis se condicionó una respuesta menos voluntaria (reacción de los párpados). En el primer grupo se perdió la respuesta condicionada durante la regresión hipnótica de la edad; en el segundo grupo no se presentaron cambios en la respuesta condicionada durante la regresión. Por lo tanto se llegó a la conclusión de que el estudio de las respuestas condicionadas establecidas durante la regresión hipnótica de la edad no aportan pruebas sobre la realidad de este fenómeno.

RESUME

Le but de cette étude était de tester la réalité de la régression par âge sous l'hypnotisme en déterminant les réflexes conditionnés établis durant la régression. Chez six sujets, un mouvement volontaire (retirement de la main) fut conditionné; chez six autres sujets, une réaction volontaire moindre (réaction de la paupière) fut conditionnée. Chez le premier groupe, la réaction conditionnée cessa durant la régression par âge sous l'hypnotisme; chez le dernier groupe, il n'y eut aucun changement dans la réaction conditionnée durant la régression. On conclut que l'étude des réactions conditionnées établies durant la régression par âge sous l'hypnotisme ne fournit aucune preuve de la réalité de ce phénomène.

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FOREWORD

The purpose of the QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY is to present promptly brief abstracts, noncritical in character, of the more significant articles in the periodical medical literature of Europe and the Americas.

For readyer reference, the abstracts are classified under the following general headings:

PSYCHIATRY

1. Administrative Psychiatry and Legal Aspects of Psychiatry
2. Alcoholism and Drug Addiction
3. Biochemical, Endocrinologic and Metabolic Aspects
4. Clinical Psychiatry
5. Geriatrics
6. Heredity, Eugenics and Constitution
7. Industrial Psychiatry
8. Psychiatry of Childhood
9. Psychiatry and General Medicine
10. Psychiatric Nursing, Social Work and Mental Hygiene
11. Psychoanalysis
12. Psychologic Methods
13. Psychopathology
14. Treatment
 - a. General Psychiatric Therapy
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In fields which are developing as rapidly as are psychiatry and neurology, it is obviously impossible to abstract *all* the articles published—nor would that be desirable, since some of them are of very limited interest or ephemeral in character. The Editorial Board endeavors to select those which appear to make a substantial contribution to psychiatric and neurologic knowledge and which promise to be of some general interest to the readers of the REVIEW. Some articles, highly specialized in character, or concerning a subject already dealt with in an abstract, may be referred to by title only at the end of the respective sections.

A section entitled INTERNATIONAL RECORD OF PSYCHIATRY AND NEUROLOGY is included at the beginning of the journal. The Record Section consists of advanced clinical and experimental reports.

The Psychiatry and Neurology Newsletter was compiled by Doctors Leon Epstein and Francis N. Waldrop.

The Editorial Board at all times welcomes the suggestions and criticisms of the readers of the REVIEW

WINFRED OVERHOLSER, M.D.
Editor-in-Chief

QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

Incorporating the International Record of Psychiatry and Neurology

psychiatry

ADMINISTRATIVE PSYCHIATRY AND LEGAL ASPECTS OF PSYCHIATRY

42. - *The Quest for a Test of Criminal Responsibility.* MANFRED GUTTMACHER, Baltimore, Md. Am. J. Psychiat. 111:428-433, December 1954.

In historical perspective, the author gives the chief medical and legal criticisms of the McNaghten rule of criminal responsibility, which was pronounced in England in 1843 and which has since become the guiding principle in 47 American states. He quotes from recent decisions and statements of such prominent American jurists as Chief Judge Biggs, of the U. S. Court of Appeals for the Third Circuit, and Justice Frankfurter, of the Supreme Court, indicating a growing sentiment among leading legal authorities that the "right and wrong test" is inadequate in the light of modern psychiatric knowledge.

He then lists five formulas of criminal responsibility that have been used or suggested, and analyzes each. First, the author considers the suggestion that the plea of insanity in criminal proceedings be abandoned and that the issue, in regard to sentence and disposition, be brought up only after conviction. Enactments providing for this had been passed by two state legislatures but had been declared unconstitutional. Secondly, he reviews the McNaghten formula, which would provide exculpation only in the cases of defendants so affected by mental disease "as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know what he was doing was wrong." He reports that recent polls of psychiatric opinion have expressed overwhelming dissatisfaction with this rule, with its one-sided emphasis on the cognitive function of the mind. Moreover, it is held that it is framed in ethical and philosophic terms which represent no measurable psychologic reality. The third formula combines the McNaghten rule and the irresistible impulse. This has the shortcomings inherent in any attempt to define insanity by a particular symptom or group of symptoms. The fourth suggestion attempts to equate criminal irresponsibility with commitability. The author does not favor the use of a single criterion for devices that serve totally

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dissimilar social functions. The fifth suggestion includes adoption of the New Hampshire rule which exculpates a defendant if he is found to have been suffering from a mental disease at the time of his offense and if the act with which he is charged was a product of the disease.

The article then quotes extensively from a correspondence, that occurred nearly a century ago between Dr. Isaac Ray and Judge Doe of New Hampshire, which indicates the origins and the philosophy of the New Hampshire rule.

The author outlines what he feels should be required of the psychiatric expert in a criminal trial:

1. A statement as to whether the defendant is suffering from a definite and generally recognized mental disorder, and why and how this conclusion was reached is necessary.

2. If it has been asserted that the defendant suffered from a mental disorder, its name, chief characteristics, and symptoms with particular emphasis on its effect on an individual's judgment, social behavior, and self-control, should be given.

3. A statement of the way and degree in which the malady has affected the particular defendant's behavior, especially in regard to his judgment, social behavior, and self-control should then follow.

4. The defendant should be asked whether the alleged criminal act was, in his opinion, a product of the mental disorder.

The article concludes with the author indicating his preference for general adoption of the New Hampshire rule of responsibility.—*Author's abstract.*

43. *Narcoanalysis and Criminal Law.* JOHN M. MAC DONALD, Denver, Colo.
Am. J. Psychiat. 111:283-288, October 1954.

The use of drugs in the examination of suspected criminals has aroused considerable controversy. A barbiturate drug is injected intravenously to induce a state of mind in which the suspect becomes more talkative. The term "truth serum," is misleading as the drug used is not a serum and does not always lead to the truth. Drugs cannot be used without the suspect's consent. Even if a confession is made by a criminal while under the influence of drugs, the confession is inadmissible in evidence because of the rule against involuntary confessions.

Criminal suspects, while under the influence of barbiturate drugs, may deliberately withhold information, persist in giving untruthful answers, or falsely confess to crimes they have not committed. Narcoanalysis is of doubtful value when used for the purpose of obtaining confessions to crimes. The psychiatrist is not an amateur detective and for ethical reasons should not perform narcoanalysis in order to aid criminal investigation. The technique is sometimes of value in the psychiatric examination of suspected criminals who have entered a plea of not guilty by reason of insanity.

The suspect's consent should be obtained after he has had an opportunity to consult his attorney. Information obtained under narcoanalysis should not be

used in evidence to determine the suspect's guilt or innocence of the alleged crime unless the suspect or his attorney requests its use.

Narcoanalysis may be used to restore speech in mute patients or to recover memory in cases of amnesia. It may also be of value in examining patients who are reluctant or unable to discuss certain subjects with the psychiatrist. Narcoanalysis is not recommended when malingering is suspected.

Even after careful psychiatric examination and observation of the suspect's behavior under narcosis, it may not be possible to give a confident opinion of the truth of his disclosures under the influence of drugs. The courts would be wise, therefore, to continue their present critical attitude toward narcoanalysis. 9 references.—*Author's abstract.*

For Reference

44. *Pioneers in Criminology; III. Isaac Ray (1807-1881).* WINFRED OVERHOLSER, Washington, D. C. J. Crim. Law & Criminology. 45:249-263, September-October 1954. 36 references.

ALCOHOLISM AND DRUG ADDICTION

45. *Chlorpromazine in the Withdrawal of Habit Forming Drugs in Addicts.* G. H. AIVAZIAN, Memphis, Tenn. Dis. Nerv. System. 16:57-60, February 1955.

The purpose of this study was to evaluate the effectiveness of chlorpromazine in the withdrawal of habit-forming drugs in addicts. To this effect a modified sleep therapy technique was devised with the combined use of chlorpromazine and barbiturates. Twenty-one patients were treated and the results were compared with a group of 37 patients treated by prolonged narcosis with barbiturates alone.

Technique: After a brief explanation, treatment is started with total withdrawal of the drug in every case. Chlorpromazine is administered I. M. 50 mg. every eight hours for three days, twice a day for two days, and once a day at bedtime for four to six days. The I. M. dose is replaced by the same amount orally which in turn is gradually reduced and eliminated. The average daily dose of barbiturates is 500 to 700 mg. given in three divided doses.

Results: Sleep is easily induced and maintained for long hours. The abstinence symptoms were minimal or absent with the exception of backache. The side effects observed were: diarrhea or constipation, profuse sweating, rapid pulse, slight rise in temperature, polyuria, dryness of the mouth and nose, disturbing dreams and nightmares, and local reactions due to I.M. injections. Appetite varied from poor to very good. During convalescence the usual symptoms encountered, such as palpitation, oppression in the chest, precordial distress, and anxiety were mild. Post-withdrawal insomnia, referred to as intractable, is of shorter duration and controlled with greater ease. No complication or untoward reactions of any importance were observed.

The advantages of this technique are: satisfactory control of abstinence symptoms, short duration, easy nursing, absence of toxic effects and complications, and

smoother convalescence. As a group these patients were more amenable to psychotherapy. 12 references.—*Author's abstract.*

CLINICAL PSYCHIATRY

46. *Relationship between Deafness and Psychotic Illness.* F. HOUSTON AND A. B. ROYSE, Hull, England. *J. Ment. Sc.* 42:990-993, October 1954.

The psychologic effects of peripheral deafness are caused by doubts about the environment and feelings of inferiority resulting therefrom. Based on tinnitus, patients develop ideas of reference with auditory hallucinations and persecutory delusions.

To show that a statistically higher proportion of paranoid patients was found among deaf than nondeaf psychotics, all the patients said to be deaf in a mental hospital of 1,100 were investigated. It was found that some of them were not deaf, but merely withdrawn schizophrenics. Others denied being deaf because they heard voices. The deaf group was matched for age and sex with a control group of nondeaf subjects, who were selected alphabetically.

To test our hypothesis, the groups of 40 deaf and 40 nondeaf were divided into 23 not paranoid and 17 paranoid of the former, and 32 not paranoid and 8 paranoid of the latter. The proportion of paranoid in the deaf exceeds the proportion of paranoid in the nondeaf.

The value of P is 0.026, which is significant at the .05 level of confidence, shows a significant correlation between deafness and paranoid symptoms. The degree of correlation was also estimated by tetrachoric correlation.

The deaf group was found to be less deteriorated. This is possibly due to less constitutional genetic loading where exogenous factors play a bigger part. 7 references. 2 tables.—*Author's abstract.*

47. *On the Natural History of Hysteria in Women.* DEWEY K. ZIEGLER AND NORMAN PAUL, Boston, Mass. *Dis. Nerv. System.* 15:301-306, October 1954.

In an attempt to define the current meaning of the term "hysteria" a study was carried out in which all available follow-up data were obtained during 1952-53 on an unselected group of patients diagnosed as "psychoneurosis hysteria" and hospitalized for a brief period in the years 1927-1932 at the Boston Psychopathic Hospital.

Of the total of 66 patients over half were interviewed in person. It was discovered that 15 had died of various causes and that 22 had had subsequent admissions to mental hospitals with a diagnosis of psychosis, the most common psychosis being schizophrenia. Recurrence of somatic conversion phenomena occurred in very few patients. Analysis of the type of subsequent mental illness among those patients diagnosed as psychotic revealed that 7 had a progressive chronic mental illness and 11 suffered from recurring acute self-limited psychosis. Of the 22 individuals subsequently psychotic, 9 had a previous history of chorea, influenza or rheumatic fever as compared with one such previous history in the

group of 22 "hysteria" patients who were not subsequently psychotic. The criteria for the diagnosis of hysteria are discussed. It is pointed out that these cases when first seen fulfilled these diagnostic criteria; the extremely diverse subsequent history suggests that the term hysteria, as used, includes a heterogenous group of illnesses varying from organic neurologic disease and early symptoms of severe psychosis to a benign situational anxiety. 7 references. 7 tables.—*Author's abstract.*

48. *On Discovery and Experiment in Psychiatry.* HENRY W. BROSN, Pittsburgh, Pa. Am. J. Psychiat. 111:561-575, February 1955.

Statesmen and scholars alike are publicly asserting the cash value of new ideas in all fields of science. Research in psychiatry, as in other disciplines, is a vital necessity, not a luxury. Since we are already committed to placing more resources in these fields, it is vital that physicians and psychiatrists inform themselves of the central issues. Physicians can exert untold influence upon laymen about the research of the future if they are well informed and have convictions about the best methods to receive support from universities, foundations, and the Federal agencies. They have a duty to do so, since they have much valuable personal experience to bring to this field, and it would be wasteful to disregard this matter now only to be forced to return to this neglected topic at a later date.

The responsible physician will see the need for research about research, a sympathetic but close examination of the men who do the work, and the conditions under which they labor. To some, the problem of how to encourage the vital qualities in our young students, and then how to select those with the most promise would seem one avenue to providing highly needed manpower in the research field. Various scholastic approaches to this problem are mentioned.

There has always been a scarcity of genuine talent in this field, and in spite of occasional exceptions, most residents have not had enough identification with the rewards of research to withstand the attractions and satisfactions of clinical work. There is no doubt that many men can do important experimental work in clinical psychiatry just as in clinical medicine, but the problem becomes more difficult as the experiments become more psychologic in a manner which does not permit relatively easy recording, comparisons, repeated trials, and public verification. The clinician working with a single case is not in as flexible a position to manipulate the material presented to him by a patient, as the experimenter whose primary obligation and interest is the problem rather than the total person. However, single cases may be the best sources of new ideas which will markedly alter our theory and practice. The psychiatrist should use currently acceptable methods of statistical, sociometric, physiologic, and biochemical methods to assist him whenever possible.

Some unrewarding investigative career patterns are illustrated. Reference is made to studies in the recent literature of scientists and the picture of their present day life.

Four pedagogic devices for teaching about observation and experiment are discussed: (1) active participation in a laboratory; (2) a seminar course in which investigators would tell their own story of origins, growth, and trials of their work; (3) the case history method, in which the human elements in research are brought to light, and (4) small discussion groups focusing on a problem (e.g., symptom formation in hysteria) with comparisons of how different men engaged themselves with these problems.

Psychiatrists have several functions in improving research: actual participation, active and passive support, and the study of investigators. The importance of unconscious motivation to work patterns is now better appreciated. The need for long-term studies is emphasized. Many psychiatrists can make a personal contribution by writing of their own struggles, and by reporting their experience with professional investigators. 62 references.—*Author's abstract.*

49. *The Ganser Syndrome in Psychoses.* ALAN A. LIEBERMAN, Elgin, Ill. *J. Nerv. & Ment. Dis.* 120:10-16, July-August 1954.

In the borderline twilight of an early regressing illness, one finds transient mechanisms attempting to deal with unacceptable instinctual issues. The author regards the Ganser symptoms in this category of defenses, and considers its appearance as a feature of serious portent and a manifestation of regression. Contemporary dynamic psychiatry regards the "psychotic" ego as still in dynamic status, in endlessly shifting balance, requiring constant re-enforcement by defenses against threats from within, and without the ken of constricting ego boundaries. The Ganser symptom may prove to be one such mechanism, useful for its ego-sparing value, albeit too often transient and unsuccessful in its purpose and goal accomplishment. The author presents 5 case protocols; one patient exemplifying frank malingering is contrasted with 4 other patients who had utilized the Ganser complex in varying degrees.

The Ganser symptom may be regarded not only as an expression of defeat and retreat, but also as a reconstruction, a last-ditch effort to preserve the ability of the ego to invest in objective reality by actually taking some part in it. The medium of approximate answers allows this to become possible, as if to deny the impending dissolution. The Ganser type of response takes on the appearance of extreme ambivalence, with representation close to the surface of awareness. Because this type of patient appears clinically to be in a better state of contact than he would have others believe, one is invariably attracted to the proposition that the patient may be simulating mental illness in the manner of the malingerer. Clinical experience with the malingerer, however, indicates clearly that this form of disturbance is more surely under full volitional control and awareness at all times, and that under appropriate pressure the ego encounters no difficulty in completely disavowing and renouncing the simulation without suffering any serious alteration in personality. This, however, is not true in the Ganser state. Here, these symptoms, although appearing to reside within the sphere of volitional

manipulation, actually come to represent a resolution of conflict on unconscious levels.

Ganser symptoms are of extremely transient nature, the invariable prelude to a psychotic situation with more grave portents to follow. This syndrome, then, proves to be ineffectual in forestalling regression to primary narcissism, and ego strength is abandoned to pave the way for the psychotic break from reality. The author believes that keen scrutiny and attention to the earliest manifestations of a developing mental illness may reveal a higher incidence of Ganser-like quality of responses and behavior. 8 references.—*Author's abstract*

50. *The Role of Psychic Phenomena in Mental Disease.* J. M. RADZINSKI, Chicago, Ill. Dis. Nerv. System. 15:370-373, December 1954.

There has been a tendency in American psychiatry to exaggerate and misinterpret the role of psychic phenomena in mental disease to the detriment of psychiatric progress. The multiplicity of schools of psychogenic orientation and their many cross currents as well as the disappointing therapeutic results cast serious doubt upon the etiologic importance of psychogenic factors in functional mental disorders. Psychotherapy has been found wanting in such basic states as anxiety, cyclothymic states, hallucinations, and delusions. On the other hand, the current physico-chemical approach in the same conditions is seldom without a dramatic effect. Mental ills, therefore, have their roots primarily in the patient's internal rather than his external environment.

The role of psychic phenomena is believed to be threefold: (1) Their investigation uncovers the course and logic of psychic processes under disturbed physiologic conditions in the nervous system and points to the nature of the disease in the same way as physical symptoms point to disturbances in other organs. (2) Familiarity with them is the principal avenue of rapport and understanding between the patient and his physician. (3) They help to assess the patient's psychic potentialities and to aid him to function in society within the limits of these potentialities.

Psychotherapy of all schools should be regarded as symptomatic and not causal, and the term, psychotherapy, should be separated from the magic halo with which it has been invested by the psychogenic schools of psychiatry. 13 references. 1 table.—*Author's abstract*

HEREDITY, EUGENICS AND CONSTITUTION

51. *Thoughts on the Present Status of Knowledge of Schizophrenia Constitutional Pathology. (Gedanken zur Heutigen Schizophrenielehre—Am Beispiel der Konstitutions Pathologie Erläutert.)* DR. M. BLEULER, Psychiatric University Hospital, Burghölzli-Zurich. Wien. Ztschr. f. Nervenheilkunde 7:255-270, 1953.

At present our conception of schizophrenia is in a state of fermentation. From the many opinions and observations, a new theory will be crystallized and new

scientific hypotheses derived which in the end will influence the clinical treatment. Of these, the author singles out the following facts:

1. The illness does not change a healthy personality but is rather subjectively experienced as a development of the personal history.
2. All the conditions which formerly were regarded as symptoms of a primarily schizophrenic somatic sickness may be explained today just as well or better as secondary consequences of a schizophrenic mental disease with its emotional tensions and unhygienic ways of behavior.
3. It has not been possible to demonstrate that the somatic therapy causally affects a somatic process which may lie at the basis of the schizophrenia.
4. The former concepts of a constitutional pathology for the schizophrenia have undergone a revolutionary change.

While the Mendelian theory of heredity concerns only the transmission of single characteristics, regardless of the total individual, the author points out a different aspect in the total personality of the schizophrenic. One looks again for the causal importance of the life conflicts in the schizophrenic development. The fact that psychopathic and psychotic relatives often exert a devastating moral influence on children and juveniles, who later become schizophrenic, may indicate that the sickness is a pathologically developing process of personalities caused by adverse experiences with other people. However, the author feels that the psychic injury suffered in this development is tormenting and harmful only to those personalities who take the experiences that way.

So far, it has been impossible to formulate a causal theory of schizophrenia based either on the simple Mendelian law or on psychogenetic findings. The surroundings of the individual create his original preparedness to react and the person himself stamps his influence on his surroundings. This is important for psychotherapy. One must discover the human conflict behind the mask of insanity. The creation of a human community is essential in the treatment of schizophrenia.

PSYCHIATRY OF CHILDHOOD

52. *Metabolic Studies in Mongolism.* A. SIMON, CHARLES LUDWIG, JOHN GOFMAN, AND G. HAMILTON CROOK. Am. J. Psychiat. 111:139-145, August 1954.

In order to develop further information concerning thyroid, cholesterol, and lipid metabolism in mongolism, a series of 74 patients residing at a hospital for the mentally retarded, all of whom have been diagnosed as suffering from mongolism, was studied.

As a control for the group of mongoloid children (aged 5 to 15) a series of 17 patients of similar age and diagnosed as "undifferentiated mental deficiency" was also studied. The diet for each group was essentially the same—no patient was receiving thyroid medication. Serum protein-bound iodine, serum cholesterol, and lipoprotein levels (S_f 12-20) on each patient were determined. The present study

indicates that the serum cholesterol level in children (aged 5 to 15), suffering from mongolism, is sufficiently elevated when compared to normals, although this is not true when compared to normals of older patients. Since the cholesterol level of the serum is not too accurate a measure of thyroid activity, and since the levels of protein-bound iodine are not lower than those reported in normal children, it cannot be definitely stated that this comparative elevation in serum cholesterol necessarily proves decreased thyroid activity in mongolism. The lipoprotein level (S_f 12-20) of mongoloid children is, however, very significantly higher than that in the group of undifferentiated mental defectives, and even more significantly so when compared to a group of normal children. How much this may be related to thyroid function or to the function of other endocrine glands is not yet known. The effect of decreased thyroid function on this fraction of lipoproteins is now being studied. It is known that elevated levels of S_f 12-20 molecules of lipoproteins are associated with increased tendency to atherosclerosis. The most marked differences between mongoloids, normal, and controlled children occur in the level of large molecule lipoproteins of the S_f 12-20 class, the mongoloids being highest, the cases of undifferentiated mental deficiency intermediate, and the normals lowest.

53. *Specialized Techniques in the Treatment of Juvenile Delinquency.* FRANK J. CURRAN, Charlottesville, Va. J. A. M. A. 157:108-113, January 8, 1955.

The first child guidance clinic to use the "team work approach" of psychiatrist, psychologist, social worker, and pediatrician was organized in Chicago in 1909, as a service for the Juvenile Court. The majority of the patients were adolescent delinquents who cooperated poorly with outpatient therapy. Actually, this early pioneering work was organized chiefly on a research basis and treatment facilities were meager. As new clinics were organized, the clinics tended to accept neurotic rather than delinquent children for treatment. They put emphasis on the treatment of the younger child and accepted those children whose parents solicited and cooperated with treatment procedures. During the next three decades, reports of work with adolescent delinquents were pessimistic, with follow-up studies indicating recidivism in 35 to 88 per cent of cases.

The author organized an inpatient service for adolescent boys, ages 12 to 16, at Bellevue Psychiatric Hospital in 1937. The majority were delinquents, referred from children's courts for repeated probation violations, sex offenses, murder, etc. The majority were kept in the hospital 30 days. They attended school and were given combinations of individual and group therapy. Among the group therapy procedures were dramatic activities, art work, and group conferences on problems of sex and aggression, as well as various recreational and athletic programs.

Statistical studies revealed that 63 per cent had primary conduct disorders, 8 per cent had psychopathic personalities, 20 per cent were mentally deficient, 1.1 per cent had psychoneuroses, and 8 per cent had psychotic manifestations (schizophrenia, postencephalitis, post-traumatic). The high rate of mental de-

ficiency does not mean a relatively high proportion of defective delinquents. This was due to a local New York rule which necessitated hospitalization of defectives prior to their commitment, when parents wouldn't sign necessary petitions for commitment.

A follow-up study of the first 300 of these patients indicated that recommendations to the court had been followed out in 85.66 per cent of cases and that 67 per cent had made a good community adjustment, while only 10.66 per cent had future court appearances.

The paper emphasizes the need of the inter-disciplinary approach for delinquents and their parents, not only in hospital or clinic settings, but also in juvenile courts, detention homes, and training schools. References are made to the work done at Youth House, a detention home for delinquents in New York City, and to long-term treatment centers such as the George "Junior Republic" in Freeville, N. Y.; Ormsby Village, Ky.; Hawthorne-Cedar Knolls School, N. Y., etc. A brief description is also given of the Chicago area project (show) and of the Cambridge-Somerville Youth Study.

The author believes that treatment of adolescent delinquents is possible if their parents are cooperative and if the initial resistance and suspicion of the adolescent can be overcome. Frequently, the initial period of treatment must be done in a place of confinement (hospital, detention home, etc.). In some instances, such treatment can be successful on an outpatient basis only when an authoritarian approach is used and the adolescent's placement and remaining position on probation is conditioned by cooperation of the patient and his parents for treatment in the psychiatric clinic. The author believes many adolescents are happy to feel compelled to come for treatment; they welcome the help, but can save face with their contemporaries by claiming they are forced to submit to treatment.

The author stresses there is no single cause, and therefore, no single therapy for delinquency. Modification of environmental situations, changes in attitudes of delinquents and their parents, correction of physical and educational defects, as well as psychotherapy are needed.

Some consideration is given to preventive aspects, such as providing special tutors for children with reading defects, shop and ungraded classes for the children of limited endowments, closer relationship of parents, police, recreational leaders, etc., to improve conditions in slum areas from which a high percentage of delinquents emerge. 13 references.—*Author's abstract.*

54. *Mania in Childhood.* JAMES F. MC HARG, Glasgow, Scotland. Arch. Neurol. & Psychiat. 72:531-539, November 1954.

Although functional psychosis in the prepubertal period of childhood is believed to be rare the occurrence of schizophrenia at that period is not now questioned.

Authors are quoted who differ widely, however, about the frequency and even the occurrence of manic-depressive psychosis in the prepubertal period. Much of the literature is shown to refer chiefly to the occurrence of the psychosis during

the period of puberty and not in childhood proper. Many authors also believe that alleged cases are due to faulty observation or interpretation, while others accept the fact of its rare occurrence. Most of the few references are to the depressive phase and the occurrence of manic phases is hardly even considered. Still less frequently have cases been described in detail.

A case of mania occurring in a girl of 11 over a year before the onset of menstruation is described. The manic phase, showing typical features of elation, overactivity, and flight of ideas was of fairly sudden onset and lasted for eight weeks. It was followed by eight weeks of typical agitated melancholia and finally by complete spontaneous remission. There was a positive family history, possible environmental factors were minimal, and recovery took place without special psychotherapy. 35 references.—*Author's abstract.*

PSYCHIATRY AND GENERAL MEDICINE

55. *The Need for a New Physiology.* GEORGE L. ENGEL, Rochester, N. Y. *Psychosom. Med.* 16:368-373, September-October 1954

This paper originated as a presidential address and an introduction to a round table discussion on "Neoplastic Disease and Psychological Process: an Exploration," given at the 1954 meeting of the American Psychosomatic Society.

Currently only a small segment of clinical medicine is represented in the bulk of psychosomatic study. The reasons for such selectivity include impressionistic conclusions made before and without any study of relevance of the psychologic data, oversimplified concepts of "bad" emotion causing bodily changes, and a psychogenic orientation of the investigator which tends to exclude consideration of conditions with gross organic pathology. Such variables as availability of clinical material, the setting in which it was seen, and the techniques and skills of the investigator to identify, study, and influence the somatic processes have also determined the selection of material for psychologic study.

The psychosomatic field has utilized certain developments in physiology and psychoanalysis for its hypotheses. The physiologic models have been those advanced by Cannon, Pavlov, and Selye, while psychologically similar models were independently deduced by psychoanalytic techniques. Psychoanalytic models, however, have gone on to recognize the importance of growth, development, and the effect of the past on present behavior with the concepts of the mother-child unit, and object relationships and their vulnerability during various phases of development, with infantile sexuality being given special importance.

In spite of these advances in psychologic concepts, physiologic formulations by most workers are still in terms of Cannon's emergency theory.

Re-examination of Cannon's fight-flight pattern of response to an external physical stress reveals he dealt with acute experiments in adult animals which amounted to a highly specific closed information system. This may have its application in the physiologic processes of the anxiety reaction of man but does

not represent the types of physiologic processes taking place during hypnotically induced lesions, interruptions of object relations or severe maternal deprivations. Thus, there is as yet no physiology of the mother-infant symbiotic unit, of object relationships, of separation, grief or depression, of love or sexuality. However, with the extended interests of investigators to more diversified groups of patients the limitations of classical physiology have become more apparent.

Psychoanalysts such as Margolin, Grinker, and Benedek among others are trying to reformulate the physiologic processes in terms of the newer psychologic concepts. However, Mirsky alone has developed a design of physiologic and biochemical investigations in keeping with current physiologic concepts.

With the development of such methods for measuring the physiologic capacity of the individual during various dynamic psychologic interactions, it will be possible to do more than observe and speculate. Prediction of pathology that will develop will be possible, as well as where and under what conditions it will develop.

The application of a new physiology for the study of cancer patients will mean a greater fundamental knowledge of human psychology, of the conditions under which cancer develops and locates, and the effect of certain psychodynamic trends on the capacity of certain physiologic or biochemical systems and their causal or covariant relationship to each other and to the neoplastic process. The latter is of prime importance in that the demonstration of a consistent association of a physiologic process to a particular psychologic stress or affective state may reveal a link in the pathogenesis of the cancer. All this will mean better care for the cancer patient and his family, and will have psychologic, social, and preventive medical implications that can be applied to others who deal with the deformed, mutilated, and dying. 19 references.—*Author's abstract.*

PSYCHIATRIC NURSING, SOCIAL WORK AND MENTAL HYGIENE

56. *Mental Illness in Primitive Societies.* PAUL K. BENEDICT AND IRVING JACKS, New York, N. Y. *Psychiatry.* 17:377-389, November 1954.

A survey was undertaken to answer the following questions: (1) Do the major functional psychoses (schizophrenia and the affective psychoses) occur among primitive peoples? (2) Are there notable differences in form and/or incidence of psychoses in Europe as compared with those of the West? (3) Can any significant correlation be shown with cultural patterns?

The authors conclude, in general, that the major functional psychoses occur among all populations, nonliterate and literate alike. The areas surveyed were Oceania, Hawaii, New Zealand, Fiji, Negro Africa, and other areas.

It is felt that hospital admission rates among primitive groups, extremely low by western norms, underestimate true incidence. The ideal yardstick for comparison of European with primitive rates would be provided by an area in which a settled (not colonial) European population lived side by side under comparable

conditions with a native population. One can argue that incidence is actually low in primitive societies and that the unusual stresses involved in acculturation are truly causal factors. On the other hand, it can be said that psychotic individuals living in simple surroundings are able to effect a better superficial adjustment and thus are less likely to be hospitalized. Moreover, schizophrenia especially is likely to escape detection in the magico-religious world of the primitive.

Depressive states, in any form, are relatively rare in the native populations studied. There also appears to be a virtual absence, particularly among native Africans, of obsessive-compulsive psychoneuroses. The bulk of schizophrenic cases are of the "nuclear" sort, with blunting of affect, bizarreness, and other features suggesting deterioration. The relatively "intact" forms of schizophrenia appear to be under-represented. States of excitement and confusion seem to be unusually prevalent and are often misdiagnosed as manic states. It is suggested that these, in general, represent acute schizophrenic episodes. Interpreted in psychodynamic terms, this suggests that in these groups the hostility of the psychotic individual tends to be directed outward, whereas in the West this hostility is directed inward.

Western culture presents a significant contrast with at least many nonliterate cultures in the mechanisms of conscience formation and the extent to which supernatural authority figures are incorporated. Paranoid schizophrenia and paranoid forms in general appear to be relatively infrequent among primitive peoples. Although the psychotic deviations observed are subject to the total cultural configuration and become highly specialized, the more penetrating the analysis of the individual dynamics, the more apparent become the underlying similarities of these mental disorders among primitive peoples to those seen in the West. This universality of occurrence does not *per se* point to any particular etiologic hypothesis, constitutional or cultural.

The need exists for further investigations of non-western societies, more systematic and detailed than any hitherto conducted, to determine actual incidence of the various mental disorders, supplemented by additional psychologic studies, all within the appropriate culturological framework. 66 references—*Author's abstract.*

PSYCHOLOGIC METHODS

57. *Graphologic Investigation of the Psychomotor Factor in the Handwriting of Schizophrenics.* (*Graphologische Untersuchungen über die Psychomotorik in Handschriften Schizophrener.*) M. A. BREIL. Monatschr. f. Psychiat. u. Neurol. 125:193-238, April 1953.

The study was undertaken to analyse handwriting samples of schizophrenic patients for general or specific symptoms of the disease, and to determine the diagnostic value of such findings.

A total of 520 strokes in handwriting was analysed. Of these 287 were of schizophrenic patients, 61 of other psychiatric patients, and 172 of "healthy" persons.

Handwriting samples were examined for differences in thickness of strokes, quality of the stroke, and accuracy in direction of the stroke.

The authors noted two types of movement in the schizophrenic group. One of these was believed to be typical for schizophrenic handwriting, and consisted of abnormally great differences in the thickness of strokes, accompanying abnormally narrow strokes and an arrhythmic distribution of variations in thickness. This was said to express a condition of strong but irregular psychic tension on the basis of incapacity for experience and affective poverty. A second class of anomalies of stroke found in the handwriting of psychotics of all kinds was ataxia, running off the lines and unsuccessful connections.

Different kinds of schizophrenic illness could be distinguished by the general qualities of handwriting. Thus, catatonic and paranoid patients provided pictures which differed markedly from one another, while the hebephreniacs presented neither a uniform picture nor an unequivocal difference from other groups. 46 references. 16 figures.

58. *The Rorschach and Central Nervous System Pathology: A Cross-Validation Study.* JEROME FISHER, San Francisco, Calif.; THOMAS A. GONDA, San Mateo, Calif.; AND KENNETH B. LITTLE, Stanford, Calif. Am. J. Psychiat. 111:487-492, January 1955

Four Rorschach systems for detecting the presence or absence of brain pathology are compared.

The sample consists of 118 patients, all of whom were admitted to a veterans' hospital neurology ward with varied complaints and symptoms referable to the nervous system. All patients received thorough neurologic work-ups, including electro-encephalograms, skull roentgenograms, and lumbar punctures. In addition, a Rorschach had been administered to each patient as part of a psychologic examination. Diagnostic procedures such as pneumo-encephalograms were performed as indicated.

The criterion groups were derived as follows: Two attending neurologists studied independently the completed hospital charts of the 118 patients. In addition, all cases had been examined in consultation by one or the other of them. They judged 84 patients as having pathology above the foramen magnum and the remaining 34 patients as presumably having no such pathology. The groups were found to be comparable in age, intelligence, education, and socio-economic status. An index of reliability of .93 indicated a high agreement between the two neurologists and pooled ratings of many comparable neurologists.

This investigation differs from previous research on brain pathology in that there was greater representativeness to actual practice through the selection of cases from a general hospital neurology ward, yielding a continuum of cases from extreme through borderline to no brain pathology; differentiation between brain pathology and control groups on the basis of intensive neurologic work-up rather than of psychiatric diagnosis, and a measure of reliability of the criterion.

Results of the comparison of the four Rorschach systems with the neurologists' judgments indicate that three of the four systems can distinguish between persons with and those without brain pathology with better than chance accuracy. The Piotrowski and Hughes systems are highly accurate (94 per cent and 91 per cent, respectively) when they identify a case as "organic," (only 6 per cent and 9 per cent false positives). However, when these systems identify a case as "non-organic" the finding is inconclusive in that they fail to identify 62 per cent of the organic cases (false negatives). The Ross and Ross system is slightly less accurate. The Dörken and Kral system yields results that can be explained in terms of chance and shows a systematic tendency to identify too many cases as "organics," resulting in 76 per cent false positives. Only one of the four systems, Piotrowski's, maintains a validity level comparable to that obtained in previous studies.

The results are discussed and recommendations for derivation of more efficient Rorschach diagnostic systems advanced. 7 references. 4 tables.—Author's abstract.

PSYCHOPATHOLOGY

59. *On the Psychopathology of Fugues (Especially of Juveniles).* [Zür Psychotherapie der Fugues (Im Besonderen Bei Jugendlichen).] P. D. DR. D. ARN. VAN KREVELLEN, University of Leyden, Holland. Wien. Ztschr. f. Nervenheilkunde. 7:354-362, 1953.

In the past, authors have tried to subject the fugue to a certain pathography which was determined by the degree of the disturbance. Though it seemed that epilepsy might be the primary cause, its importance as well as that of hysteria in the development of the fugue has gradually been discarded. A third form of fugue has been described as psychasthenic.

Further research showed that in many instances an inclination to run away had already come to the fore in childhood, which made it questionable whether the fugue might be regarded as pathologic. "Wanderlust" is typical for adolescence.

The author defines the fugue as a way of behavior which originates in the sudden or permanently recurring impulse to break ties with the surroundings. It is based on a weak community spirit which rests either in an odd personality, a pathologic change in personality, or may be conditioned by the environment. In general, one distinguishes between fugue and vagabondage, the former being a temporary action, the latter a chronic condition.

In most cases, the fugue is an expression of a psychopathic nature. In some instances, one can trace it back to motor disturbances in childhood and a later instability. Some fugues are caused by encephalopathies, debility, and hebephrenia. It is always necessary to explain correctly the psychologic importance of the fugue. There is a vast difference between the escape of a person who feels oppression and the trip of a vacationer, even if this pleasure trip may well be an escape.

Two cases are published, one of a 16 year old boy, the other of a 20 year old domestic. 37 references.

60. *Psychopathology of Yesterday and Today. (La psychopathologie d'hier et d'aujourd'hui.)* MARCEL BERGERON. J. de psychol. norm. et path. 1-2: 265-288, 1954.

A review of the development of the study of psychopathology and its relation to modern psychiatry. 22 references.

TREATMENT

a. General Psychiatric Therapy

61. *The Rehabilitation of Chronic Open-Ward Neuropsychiatric Patients.* DEREK H. MILLER, Topeka, Kans. Psychiatry. 17:347-358, November 1954.

The study discussed the rehabilitation of chronic psychotic patients who appear to have made a satisfactory hospital adjustment. Three quarters of the patient group were suffering from schizophrenia, either well adjusted environmentally but hallucinated or delusional or, alternatively, quite inert and displaying no apparent thought disorder. The philosophy behind the study was that much of the patient's illness as it was presented could be assumed to be caused by an interaction between a sick individual and an environment which, in satisfying the needs of his illness, had itself become sociologically unhealthy.

A preliminary study was made of the ward organization, and it was found that the patients were resisting efforts toward change. They were dependent and frightened, and known by other patients to be a frigid social group. One important source of these attitudes was the way in which the patients were ambivalently held by the hospital. On the one hand, the staff encouraged dependence in the patients, and on the other, urged them to be prepared to leave and live in a boarding home.

Ward activities were minimal. Few of the patients were engaged in occupational therapy; ward government, which was a fairly old institution in the ward, was functioning rather as an attempt to get the physician's approval than as a constructive group. There were two essential approaches toward rehabilitation. Sociologically, the aim was to have the ward subculture more closely approximate that of the community outside, and concomitantly to have as few barriers as possible between the hospital and the outside world. This latter was done by the use of volunteer workers and by sending the patients into the community with these groups of volunteers.

The individual treatment program was designed to help the patient cope with stressful situations and meet social demands. An attempt was made to help the patients improve their appearance, and the ward was so arranged that easy interpersonal relations were possible.

Personnel orientation was important, and much time was spent with the staff helping them to see that rehabilitation was a realistic goal. The personnel had to

work as a team, but this was possible without many time-consuming meetings. The psychiatrist's position was carefully considered. It was felt that his main role was to face the patients' dependence, their seductiveness and aggressiveness, and at the same time to make demands on them which would ultimately amount to the demand that they become independent. It was necessary to study the use of the psychiatrist's time, which was divided differently in the different stages of the rehabilitation project. Initially, much time was spent with leaders of the unofficial ward hierarchy because it was thought that a change in their attitude would affect the attitude of the group as a whole.

Several of the cases are reported to illustrate how therapeutic prescriptions were used, how the patients had become dependent upon the hospital, and how they could be helped free of this. In addition, a case is discussed to show the type of support a patient might need both before and after leaving the hospital.

The results show a significant improvement in the discharge rate. The ward, from being a chronic custodial-care area, became an active treatment one. Some of the patients regressed and returned to the closed wards, but no greater number than in previous years. It was thought that the study demonstrated that successful rehabilitation is possible for very long-term psychotic patients. It was believed that to make this possible, the patient society must be studied and treated, as well as the sick individual within it.—*Author's abstract.*

For Reference

62. *Rhythmic Sensory Bombardment Therapy (R.S.B.T.): (A New Treatment for Patients with Psychiatric Disorders).* JOHN W. LOVETT DOUST, Toronto, Canada, AND ROBERT A. SCHNEIDER, Oklahoma City, Okla. Dis. Nerv. System. 15:357-369, December 1954. 13 references. 5 figures. 6 tables.
63. *Psychotherapeutic Aspects of the Subconscious Musical Experience. (Psychotherapeutische Aspekte des Unbewussten Musikerlebnisses.)* DR. E. FREY, Zurich. Bull. schweiz. Akad.d.med. Wissenschaft. 9:91-113, 1953.

The experience of listening to a musical work of high value is a complicated psychic accomplishment which consists primarily of subjective and subconscious elements. The subconsciousness of a musical experience is not easily accessible to psychologic analysis, but is possible by the activation of the workings of the subconscious mind through hypnosis, accompanied by a registration of the subconscious happenings in the conscious sphere of the hypnotized person.

The therapeutic value of the subconscious comprehension of a musical experience by the hypnotized person consists primarily in the activation and change of his psychic condition. This psychic reaction could have reciprocal meaning. Through musical influences, psychic connections are being searched and the analysis of such subconscious psychic reactions to the same musical experience in different persons may allow a conclusion as to the psychologic essence of a musical work.

A musical work is subconsciously most intimately understood in the sphere of feeling. The purely esthetic aspect of a musical experience is of principal importance since the subconscious mind of the hypnotized person possesses ideals of beauty and at times brings forth corresponding products, "beauty experiences," which in many cases are of positive and therapeutic value. The hypnotized individual finds himself first under the influence of negative experiences. As soon as music begins, the dreamer undergoes a complete change, is released from psychic pressures, and feels happiness and gratefulness. At the same time, colored synesthesia occur which in the end merge with the music into an entity. Space seems to change. The musical therapy becomes secondary color therapy, which is of special importance in the psychotherapy.

The esthetic musical sensation can also be fully evaluated in unmusical persons. It develops in the form of hypnotic fantasies which are determined by various symbols and give importance to the symbolisms of light and color—the light appears as the life-giving principle and the color as the element which strengthens the life instinct. 8 references. 6 pictures.

b. Drug Therapies

64. *Use of Neuroleptics in Psychiatry.* (*L'Emploi des neuroplégiques en psychiatrie.*) P. COSSA, H. BOUGEANT, AND A. LOMBARD, Nice, France. Ann. méd-psychol. 1:628-633, May 1953.

All neuroleptics are amines derived from phenothiazine. One of these, 4560 R. P., has been used in the treatment of various psychoses. The drug was given in a dosage of 150 mg. per day by intramuscular injection in solution in 3 cc. of physiologic salt solution to which a few drops of scurocain were added (to render the injections painless). No other drugs were used, except occasionally a small dosage of barbiturate. The patient was isolated in a quiet and darkened room. The dosage of 150 mg. daily was continued for 21 to 24 days, or until the designed degree of sedation was obtained; then dosage was gradually reduced.

Six patients with acute mania were treated with good results, including one who had been resistant to all other forms of treatment, another who had had a recurrence shortly after the use of electroshock treatment, and 2 who had developed manic symptoms after treatment of a depressive phase with electroshock. Two cases were treated in the depressive stage, one with good results, the other with only slight improvement. A case of mania due to the toxic effects of a drug was also successfully treated with 4560 R. P. The drug was used in 2 cases of a pithiatric syndrome, but in these cases only a comparatively short course of treatment was required. While a few cases have been treated, the results indicate, in the authors' opinion, that while 4560 R. P. gives better results in the manic phase of manic depressive psychosis, the depressive phase is best treated by other methods.

65. *Biologic Changes Resulting from an Injection of Large Doses of Insulin in Non-Diabetic Subjects; an Hypothesis of the Pathogenesis of Diabetic Coma.* (*Modifications biologiques apportées par une injection de hautes doses d'insuline chez des sujets non diabétiques. Hypothèse sur la pathogénie du coma insulinique.*) J. BILLET, R. LAFON, AND B. BILLET, Montpellier, France. Ann. méd.-psychol. 1:175-196, February 1953.

In a study of nondiabetic patients given injections of insulin in large doses for the production of insulin shock, it has been found that the degree of shock does not depend entirely upon the degree of hypoglycemia. Another important factor is the dehydration that occurs in insulin shock, indicated by excessive perspiration, pulmonary hyperventilation, and frequent urination. This dehydration is accompanied by intense thirst and some signs of hemoconcentration. If the patient drinks water because of thirst, it has been noted that excessive perspiration ceases and the coma does not become as complete as would be expected from the amount of insulin given and the degree of hypoglycemia. The study of these cases indicates there is not only a general dehydration but also a dehydration of the cells. While dehydration is not to be considered the only cause of insulin coma, it plays an important role.

It has been shown by others that the injection of insulin results in an increase in the liver glycogen. It is reasonable to conclude that the hypoglycemia following injection of insulin in nondiabetics results from the inverse transformation of glucose into glycogen by dehydration of the glucose. It has been found that in insulin coma there is a rapid fall in blood glucose for the first three to four hours. After the fourth hour, the blood glucose begins to increase even though no glucose is given. It is in the first period, before coma becomes complete, that the symptoms of dehydration develop. The coma may be prolonged while the blood glucose is increasing. When it is nearly normal on the other hand, deep coma may not develop even when the blood sugar is low. A study of the electrolytes of the blood, potassium and sodium, following the injection of insulin shows that the potassium is decreased although the sodium shows little or no increase. This results in an unbalanced sodium to potassium ration and is followed by an increase in the intracellular fluid especially in the cerebrum. The resulting cerebral edema is considered to be a factor in the symptoms of insulin coma and in some of the complications of insulin coma therapy. 3 tables. 6 charts.

66. *Indications for the Treatment of Various Neuropsychiatric Conditions with Chlorpromazine.* (*Les indications du traitement des diverses affections neuro-psychiatriques par la chlorpromazine.*) J. SIGWALD. Bull. méd. 67:319-322, June 15, 1953.

Chlorpromazine is the hydrochlorate of chloro-3-3-(dimethylamino-3-propyl)-10-phenothiazine, and is also known as 4560 R. P. and as Largactil. This drug has both a parasympatholytic and a sympatholytic action, is a sedative and hypnotic, and potentiates various analgesics. Chlorpromazine is usually given by

intramuscular injection or by mouth; it is rarely given intravenously, and if so usually as a perfusion. Occasionally chlorpromazine has been given per rectum, and the author is of the opinion that this method may be used more frequently to good advantage.

When chlorpromazine is used to produce narcosis (the sleep cure), it is always associated with barbiturates. For this treatment the patient must be hospitalized in an institution where this type of treatment is frequently used. The dosage employed is usually 0.100 Gm. daily, but may be as low as 0.075 Gm., or increased to 0.150 Gm. The narcosis should be maintained for at least one week, and is usually prolonged 10 to 15 days. The drug is not withdrawn abruptly at the end of this period but gradually reduced; oral administration may be used. When the drug is used for its sedative action without producing narcosis, it may be given by intramuscular injection or by mouth. In the more severe cases, intramuscular administration is usually preferable at first. The usual dosage is 0.025 Gm. three times a day, or a total daily dose of 0.075 Gm.; in some cases longer doses may be employed, or occasionally a smaller dose. The maximum dosage is usually continued for 10 to 15 days, sometimes as long as three weeks when the dosage is gradually reduced. When the drug is given to patients who are hospitalized, by mouth the daily dosage is usually 0.150 Gm., sometimes more. When the condition is less serious and the patient may be treated at home, the dose is usually increased from 0.50 to 0.75 Gm. daily in six divided doses to 0.150 Gm. also in six divided doses. This dosage is maintained for 10 to 15 days and then gradually reduced. In some cases, other sedatives also given by mouth may be used in addition to chlorpromazine.

Chlorpromazine has been found to be effective in the treatment of manic and hypomanic states in which it is given parenterally, often with barbiturates. It is also of value in states of confusion and excitation. In the latter, oral administration may be adequate. It is of less value in anxiety and depression, but may be a valuable adjuvant to shock therapy in these conditions. The best results are obtained in such conditions as psychasthenia, hypochondria, and neuropathic and neurotonic states. In most cases of this type oral administration of the drug is effective and the patient does not require hospitalization. Chlorpromazine is also effective in many neurologic conditions for the relief of pain, including the pain due to cancer, and in the treatment of headache, vertigo, and other late symptoms after cerebral concussion. It has also been used with good effect in severe cases of insomnia, especially in cases of insomnia associated with parkinsonism.

67. *Artificial Hibernation for the Treatment of Psychosis.* P. MARONCELLI, Ferrara, Italy. *Gior. di psichiat. e di neuropat.* 1:223-244, 1953.

Several hypotheses have been advanced to explain the action mechanism of therapies used today in the field of mental diseases, but unfortunately none of them have, so far, an absolute certitude. It is a fact that after these therapies

partial or total remission of symptoms occurred, but it is also true that the intrinsic cause of their action is unknown.

Several methods, more or less suggestive, including Pavlov's theory based upon protective inhibition and Lassner's theory of synaptic-cortical-diencephalic block are possible. It is agreed that the conduction and behavior of the latter is based on the sympathetic block at the diencephalic centers.

The method of artificial hibernation allows, with produced rest of the cerebral cortex, a recommencement of normal cortical and subcortical coordination, and activity of the central nervous system upon the function of the viscera. Inversely, an activity of the viscera on the cortex will result, thus establishing a duplex beneficial action.

On the basis of the results obtained, the therapeutic method derived from artificial hibernation and from phenothiazimic derivatives represents a new and efficacious means for the treatment of manic excitement, melancholy, and of confusional acute psychosis.

Its symptomatic indication is also extended to other forms of psychosis, epilepsy, and schizophrenia, where the method is used to overcome excitement.

Compared to other methods, artificial hibernation has the advantage of being used also in co-existing cardiovascular diseases, when the general condition of the patient is poor, or when the patient is rather old.

The impossible should not be expected from this therapy but if the indications are exact and the directions scrupulously followed, surprising results may be obtained. 24 references.

68. *Chlorpromazine: A Study of Its Action on the Circulation in Man.* C. A. FOSTER, E. J. O'MULLANE, P. GASKELL, AND H. C. CHURCHILL-DAVIDSON, London, England. Lancet. 2:614-617, September 25, 1954.

Chlorpromazine administered intravenously in doses of 5 to 25 mg. caused a varying degree of tachycardia and hypotension, which was postural, in conscious and anesthetized subjects.

Plethysmography showed that it produced a vasodilatation in hand, calf, and forearm on intravenous and intra-arterial injection. The blood flow increased further in the hand following brachial plexus block, suggesting that chlorpromazine acts directly on the arterial wall.

Intravenous injection of chlorpromazine produced a reduction of the vasoconstriction effected by the application of ice to the forehead, which was not altered by the intra-arterial infusion of chlorpromazine. An intravenous injection of 50 mg. of chlorpromazine reduced the hypertension produced by the intravenous infusion of 16 G./min. of noradrenaline; the bradycardia was abolished or replaced by a tachycardia.

The vasoconstriction in the hand blood vessels produced by the intra-arterial infusion of noradrenaline was not affected by the intra-arterial infusion of chlorpromazine. The vasoconstrictor response of the hand blood vessels produced by

the intra-arterial infusion of adrenaline was blocked by the intra-arterial and the intravenous administration of chlorpromazine.

Further work has not substantiated the statement that intravenous chlorpromazine reverses the vasoconstriction of the hand blood vessels produced by intra-arterial infusion of adrenaline. 7 references. 6 figures. 1 table—*Author's abstract*.

69. *Effect of Serpasil on Behavior and Autonomic Regulating Mechanisms.* JURG A. SCHNEIDER AND ALFRED E. EARL, Summit, N. J. *Neurology.* 4:657-667, September 1954.

Macaca mulatta monkeys were employed in a comprehensive study of the effect of reserpine, one of the main alkaloids of Rauwolfia serpentina Benth. Non-anesthetized animals were given the drug either intravenously, intramuscularly, or by the oral route of administration, and the effects on behavior, body temperature, blood pressure, heart rate, respiratory rate, and pupil diameter were studied. The doses which produced tranquilization were 0.5 to 1 mg./Kg. for the single intravenous or intramuscular dose, 50 mg./Kg. for a single oral dose, and 2 to 3 mg./Kg. for a chronic daily oral dose.

The drug produced a state of quiet and unresponsiveness to extraneous stimuli which would cause excitement and a defiant attitude in the normal untreated animal. The drug effect showed a characteristic delay of onset of about one hour after administration.

Simultaneously with the occurrence of tranquilization, a drop in body temperature, an equivocal drop in blood pressure, reduction in the heart rate, and respiratory rate were observed. Miosis and diarrhea commonly seen in other species after reserpine were not present.

Remarkably low toxicity was demonstrated for the drug inasmuch as 4 mg./Kg. intravenously and 400 mg./Kg. orally did not produce any toxic manifestations in this species.

Electro-encephalographic studies were performed in some of the animals. Even after high doses of the drug, the electro-encephalogram was essentially normal showing only a slight reduction in the frequency of the normal alpha activity when compared to control records. A clearcut difference to sleep induced by barbiturates could be established. 26 references. 5 figures. 2 tables.—*Author's abstract*.

70. *A Note on Some Therapeutic Implications of the Mescaline-Induced State.* HERMAN C. B. DENBER, Ward's Island, N. Y., AND SIDNEY MERLIS, Central Islip, N. Y. *Psychiatric Quart.* 28:633-640, October 1954.

Ten male and female patients with various psychiatric diagnoses were studied after the intravenous injection of 0.5 Gm. of mescaline sulfate followed one to one and one-half hours later by the intramuscular injection of 50 mg. of chlorpromazine hydrochloride. The extraordinary inner psychic upheaval produced by mescaline has received relatively little attention in the past. During the mescaline-induced

state, marked tension and anxiety developed. Salient conflicts were verbalized or expressed symbolically by most patients. Hostility and aggression toward significant environmental figures were shown. Marked conflict or confusion in the sexual sphere was evidenced by 7 of 10 patients.

Following the injection of chlorpromazine hydrochloride, the tension and anxiety diminished and disappeared, while some patients became quiet, drowsy, lethargic or sleepy. Forty-eight hours after this procedure, 6 patients showed a complete remission and one patient a partial remission of symptoms, while 3 patients were unchanged.

The relative importance of each drug, the physiologic mechanisms involved, and the psychodynamic factors implicated in the clinical remission are being intensely investigated under rigidly controlled conditions. 11 references.—*Author's abstract.*

c. Psychotherapy

71. *A Study of Psychotherapeutic Relationships between Physician and Schizophrenic Patients.* JOHN C. WHITEHORN AND BARBARA J. BETZ, Baltimore, Md. Am. J. Psychiat. 111:321-331, November 1954.

The authors have conducted a study of the relationships between patients with a schizophrenic illness and their physicians and the effects thereof on the patients' clinical progress. The following empiric facts were closely examined: the types of relationship established by the patients with their physicians; the types of diagnostic perspectives in which the physicians view their patients; the types of strategic goals selected as the primary focus of therapy, and the types of tactical patterns utilized in therapy with the patients. Attention was focused on the psychotherapeutic relationships of 14 physicians and 100 schizophrenic patients. The patients were divided into two groups, the A group, 48 in number, and the B group, 52 in number. The A group had been treated by the seven physicians who were most successful with schizophrenic patients and the B group by the seven physicians who were least successful.

In the A group, 75 per cent of the patients were improved at discharge, whereas only 27 per cent of the B group were improved. From analysis of nurses' notes, charts, conference notes, and other portions of case records which served to supplement and check the physicians' notes, comparisons were made as to differences in the way the physicians worked with these patients and the way the patients responded. The comparisons and contrasts of these facts indicated improvement in the schizophrenic patient is most likely to occur: when the physician indicates in his personal diagnostic formulation some grasp of the personal meaning and motivation of the patient's behavior, going beyond mere clinical description and narrative biography; when the physician, in his formulation of strategic goals in the treatment of a particular patient, selects personality-oriented goals; and when the physician, in his day-by-day tactics makes use of "active personal participa-

tion," rather than the patterns "passive permissive," "interpretation and instruction," or "practical care."

The authors interpret these findings, which are statistically significant beyond the .001 level of mere chance, to mean that in the psychotherapy of schizophrenic patients, success is to a large degree determined by the differences found among physicians in the extent to which they are able to approach their patients' problems in a personal way, gain a trusted, confidential relationship, and participate in an active, personal way in the patient's reorientation to personal relationships.

72. *The Use of Psychotherapy for Seriously Disturbed Patients.* W. K. MC KNIGHT, New York, N. Y. Bull. New York Acad. Med. 31:67-79, January 1955.

The application of various psychotherapeutic techniques in the treatment of patients who are seriously disturbed and most effectively treated in the hospital setting is presented and summarized from a study of clinical material representing a series of 20 cases under treatment at the New York Hospital, Westchester Division.

A comprehensive bibliography is referred to in evaluating various psychotherapeutic objectives and the continued need for further understanding of therapeutic goals is discussed. Emphasis is placed on the desirability of utilizing the present knowledge of psychotherapeutic principles in a more widespread manner while further research is carried on, in utilizing such techniques to help patients to relate reality situations with improved motivation, and in increasingly effective ways through periods of disturbed behavior. Careful diagnostic and dynamic study, the judicial use of group and cultural facilities within the hospital environment, and the use of electroconvulsive treatment when indicated are related to individual psychotherapy based on the development of a flexible, individualized physician-patient relationship; utilizing suggestion, re-education, directive control, interpretation, and support. Combined with appropriate physical and nursing care as well as with detailed analysis and gradual modification of contributory or complicating family attitudes, a psychotherapeutic approach as described is found to enable the patient to gain maximum hospital benefit and to achieve, through his hospitalization, a meaningful and constructive experience leading to a more stable personality adjustment. 37 references.—*Author's abstract.*

73. *Common-Sense Group Psychotherapy for Mental Hospitals.* J. W. KAPMAN, Chicago, Ill. Dis. Nerv. System. 16:24-29, January 1955.

The casual encounters of ward physicians with patients when the doctor is making his rounds are more often, the author contends, mistherapeutic than therapeutic, since in the patient's skewed frame of reference and faulty reality testing, only an answer considered favorable to himself, representing his own wish-thinking, is considered an answer at all. Thus, most of these encounters serve only to fortify the patients' delusions and misapprehensions.

But in the neutral atmosphere of group therapy, participated in by his own peers, the patient can take an objective point of view. Even if this group therapy seeks no deep penetration, but merely clarifies issues revolving about hospitalization, an enormous step has been taken toward the patient's improvement and recovery. This much accomplished, the earnest therapist can go on to develop skill with more trenchant techniques. In the meanwhile, with extensive coverage of the hospital's population even with a superficial form of group therapy, a therapeutic atmosphere will come to invest the entire institution, greatly facilitating improvements and recoveries.

A set of simple criteria by which to gauge improvements objectively is also given. 4 references. 6 figures.—*Author's abstract.*

d. The "Shock" Therapies

74. *Factors, in the Preoperative Situation of Schizophrenics, Considered to Be of Significance in Influencing Outcome Following Psychosurgery.* FRED A. METTLER, ARCHIE CRANDELL, J. R. WITTENBORN, KATHLEEN LITTEN, EMANUEL H. FEIRING, AND MALCOLM B. CARPENTER, New York, N. Y. *Psychiatric Quart.* 28:549-606, October 1954.

The study reported in this article is the last of three Columbia-Greystone projects and is thus the sequel to two books, *Selected Partial Ablation of the Frontal Cortex* and *Psychosurgical Problems* both by the group of authors known as the Columbia-Greystone Associates, and both edited by Dr. Mettler. These previous studies found that a greater percentage of discharges occurred from groups of institutionalized patients subjected to psychosurgical procedures than from "control" groups. In the book entitled *Psychosurgical Problems*, the authors pointed out a certain tendency for factors to be operative in therapeutic groups which were not operative in control groups.

Briefly, it was found that although patients who appeared in both control and therapeutic groups, were carefully matched and often identical on the basis of present condition, there was a marked tendency for patients in therapeutic groups (which should better their expected results) to have exhibited in the past, a greater degree of lability as evidenced by mobility in and out of the hospital. A rating for this phenomenon was developed under the name of "occlusive index." The higher the index the poorer the improvement experience proved to be.

The present study was concerned with the attempt to determine which of the two influences, which might be operative in the determination of the "occlusive index," was more potent. These two influences were the patient's own lability and the effect of his extramural environment.

It has been found that the occlusive index depends, for the most part, on the patient's own ability to relate himself to his environment and that the occluding factors in his environment are determinative to a smaller extent. It has also been found that patients who are perceptually confused make a much poorer

showing than those who are only conceptually confused. Since certain patients, even though they may be limited or confused in perception ability, can develop extramural environments in spite of the presence of old occlusional ones. The importance of detecting the presence of, and protecting, such perceptual capacities as may be present is emphasized.

Although many other important phenomena are discussed, the most significant other contribution of this study has been to bring forward a method whereby the expectation of a psychiatric population can reasonably be determined. The method applied is not difficult or occult and does not require the use of highly skilled personnel. For the most part determinations can be made on the basis of records which are ordinarily kept in psychiatric hospitals. It is apparent that if estimates are to be made relative to the effectuality of any psychiatric therapeutic procedure it is of the greatest significance that a prior determination be made on the performance and expectation of the population to be studied and that, if the therapeutic procedure is to be adjudged to be effective, the "normal" expectation of the population must be bettered. 36 references. 6 figures. 6 tables.
—Author's abstract.

75. *Insulin Coma Therapy: A Study of Results in an Army Hospital.* JOSEPH E. LIFSHUTZ, San Francisco, Calif. Am. J. Psychiat. 111:466-469, December 1954.

Insulin coma therapy was begun at the Neuropsychiatric Service of Madigan Army Hospital in October, 1951. By June, 1954, a series of 89 patients had had a full course of treatment, consisting in most cases of 30 or more comas. A group of 89 carefully selected patients was used as the control group.

Results showed no difference in the two groups, as a whole and broken down diagnostically, in the percentage of patients improved. Among the small number of catatonics, significantly more patients improved without insulin than with it. There was no advantage of insulin over electric shock therapy, in acute or chronic psychiatric illness. Length of hospitalization was 4.2 months for the control group and 7.1 months for the insulin group.

It is concluded that insulin coma therapy in itself has been of little value in the improvement of patients who have had it. The author states that the results obtained, which only equal the results of a very similar group not getting insulin, may have been due to somatic and psychotherapeutic efforts simultaneous with the insulin coma therapy. Consequently, the excess period of hospitalization, for the insulin treated group, does not appear to be warranted. 1 reference. 3 tables.—Author's abstract.

neurology

CLINICAL NEUROLOGY

76. *Multiple Cerebral Hemorrhages. (Hématomes intracérébraux multiples.)* JEAN HOZAY, Antwerp, Belgium. *Acta neurol. et psychiat. belg.* 53:388-392, June 1953.

A case of multiple cerebral hemorrhages is reported. The patient was a woman 32 years of age, who had had headaches of a diffuse type for several years, when she developed a sudden, but temporary, paresis of the arm and the leg on the right side, lasting only 24 hours. A week later right hemiplegia developed with loss of all tendon reflexes. The patient was taken to the hospital in a semi-conscious state and remained in a critical condition, although showing temporary improvement at times, until her death about three weeks later.

An electroencephalogram, the day before death, showed a generalized dysrhythmia, very similar to that observed with diffuse lesions of the cortex. Autopsy showed several old hemorrhagic suffusions in the prerolandic region on the left side. There was a small hematoma in both the left and right prefrontal region and another in the rolandic area on the left side. In the left temporal region there was another hematoma, extending backward into the ventricle, and still another hematoma (the fifth) on the left side which appeared to be older than the other hematomas, which were apparently of recent origin.

A review of the literature showed a difference of opinion as to the frequency of multiple cerebral hematomas. Some authors consider them to be rare and others consider them fairly common, though most reporting multiple hematomas report only two occurring in any case. Some, however, have observed cases with more than two hematomas, as in the author's case. The question of the pathogenesis of multiple cerebral hematomas is but part of the general question of the pathogenesis of all cerebral hemorrhages. 11 references. 4 figures.

77. *The Status of Neurology as a Specialty in Various Countries.* LOTHAR B. KALINOWSKY AND H. HOUSTON MERRITT, New York, N. Y. *Neurology.* 4:668-673, September 1954.

An important but by no means decisive factor in the standing of a medical specialty is its representation in the universities. In the United States an ever increasing number of medical schools have independent full professorships for neurology. In England where neurology has contributed so much to present day knowledge, there is only one full professorship; neurology is represented in most teaching hospitals for postgraduate training within the framework of medicine. Also, there is no full chair for neurology in Switzerland. In many places neurology had to gain its independence from internal medicine. In others such as Holland,

it had its roots in psychiatry. In Germany, where neurology developed equally from internal medicine and psychiatry, the trend seems to be towards an increasing independence from both, although few full professorships exist for neurology alone. In most German universities, however, neurology and psychiatry remain combined.

Today it appears that neurology is more closely linked to psychiatry than to internal medicine. The enormous expansion of both neurology and psychiatry makes it increasingly difficult for one individual to master both areas of medicine and the trend towards a separation seems inevitable. It should be hoped, however, that the ties to psychiatry will not be severed completely either in research or practical clinical work. While many feel that neurology has suffered from the enormous growth of modern psychiatry, it is equally true that psychiatry is in danger of becoming too one-sided, forgetting that the brain is frequently the origin of neurologic as well as psychiatric disorders.

Hospitals for chronically ill patients have played an important role in the history of neurology. Some chronic neurologic departments in Europe have been discontinued and few new ones established. Special neurologic centers were organized after the first world war for cases of postencephalitis in Germany and Italy, but most of these have been discontinued. Hospitals limited to poliomyelitis seem to exist only in the United States. There are also special neurologic hospitals for brain and spinal cord injuries. The idea of rehabilitation has gained tremendous impetus during the last few years, and the neurologist can play an important role in the rehabilitation team.

In this survey, the development of neurosurgery in relation to neurology emerged everywhere as the most debated issue. No uniform trends can be seen as far as the future relationship between the two disciplines is concerned. In the same country various solutions of this problem may run parallel, giving a contrasting picture. The United States and England are the two countries where neurosurgery seems to be the most firmly established as an independent specialty. In many other countries neurosurgery is still done by general surgeons. The actual trend is best demonstrated in the three steps described by Monrad-Krohn at his own clinic in Norway. The neurosurgeon was first attached to the neurologic university hospital, later obtained a more independent neurosurgical subsection still within the neurologic hospital, and finally established an entirely independent neurosurgical unit.

Training in neurology, both undergraduate and postgraduate, cannot be easily compared in the different countries. In some of the larger medical schools of the United States, students are given neurology courses in all four years of their curriculum. Postgraduate training, too, lacks uniformity in the various countries. In the United States five years of training and experience are required for admission to an examination by the specialty board. In neurologic research the trend toward training in the basic sciences, especially biophysics and biochemistry, is quite obvious. It can be stated that neurology is still a specialty with many unfulfilled tasks, but its goals are shifting. It is moving beyond the nosologic work of the

generation of the founders of neurology. From an organizational standpoint there is need for more neurologic centers equipped for clinical work as well as research.

Neuroanatomy and neurophysiology are likely to increase in importance for human neurology, particularly if their clinical aspects are stressed. Neurology and neurosurgery should be well integrated. Interest should be developed in all borderline problems between neurology and psychiatry, orthopedics, and other specialties. Active consultation work by highly qualified neurologists must be given special attention and is the best way to convince representatives of other fields of medicine that there is continued need for a strongly represented neurologic specialty.—*Author's abstract.*

78. *Puerperal Hemiplegia.* HAROLD STEVENS, Washington, D. C. *Neurology.* 4:723-738, October 1954.

Eight cases of postpartum hemiplegia are reported with the implication that this condition is not rare but often misdiagnosed as postpartum eclampsia. More frequent requests for neurologic consultation would probably alter the statistics for this condition. The 8 cases reported here developed in previously healthy individuals with no history, signs or symptoms of toxemia, hypertension, or sepsis. The ages ranged from 22 to 39. All recovered.

The semeiology of this condition consists of headache which is usually severe, appears early, and is often persistent. Generalized or focal seizures singly or repeated are often followed by focal paralysis and sometimes with aphasia. Coma of varying duration is frequent. Papilledema may be present and the spinal fluid pressure is often elevated. A small or moderate number of red blood cells may be found in the spinal fluid. Cerebral venous thrombosis is generally conceded to be the etiology in this syndrome. Although confirmation of this venous thrombosis by direct visualization was not obtained in these 8 cases, the symptomatology and course conformed so precisely with the more or less stereotyped clinical pattern reported by others, that this inferential diagnosis was safely warranted. The etiologic role of cerebral venous thrombosis in puerperal hemiplegia has been demonstrated by craniotomy and at autopsy by others, particularly by British authors. The specific cause for this nonseptic primary cerebral venous thrombosis in the postpartum period remains unknown, but many authors have commented on the unique anatomy of cortical veins and venous sinuses that make them susceptible sites of predilection for thrombosis.

Diagnosis is easily established and would probably be recorded more often except for the general unfamiliarity with this syndrome. Differential diagnosis must exclude postpartum eclampsia, cerebral arterial thrombosis, brain tumor, abscess, hysterical hemiplegia, postpartum psychosis, and cerebral aneurysm.

Treatment considerations include: resolving and limiting the extension of the thrombus, lowering the intracranial pressure, lowering the blood pressure, and preventing convulsions.

In 4 of the reported cases, there was a high and fluctuating blood pressure, a

phenomenon that had not previously been described in this condition. This vascular hypertension is probably due to the increased intracranial pressure secondary to the venous thrombosis, cerebral congestion, and edema. The hypertension is a reflex response to this intracranial pressure and the use of hypotensive drugs in this syndrome may be accompanied by the serious hazard of cerebral anoxia. If the hypertension occurring with convulsions and other neurologic symptoms in the postpartum patient is misconstrued as eclampsia, serious embarrassment of cerebral blood flow might result. Thus the necessity for correct recognition of this syndrome is further emphasized.

The prognosis appears better than previously reported. Morbidity is low but susceptibility to seizures is probable. 48 references. 5 figures.—*Author's abstract.*

79. *Return of Motor Function in Hemiplegia.* CHARLES VAN BUSKIRK, Minneapolis, Minn. *Neurology*. 4:919-928, December 1954.

The ability to learn simple motor tasks involving the upper extremity was studied in 5 normal individuals and 39 hemiplegic patients. The etiology was vascular in 36 of the patients. These motor tasks included rate of tapping, rate of elbow extension and flexion, rate of pronation and supination of the forearm, and speed of elbow flexion. It was found that although the performance level may be decreased on the paretic side, the ability to improve with practice may be the same on both sides in the presence of unilateral pyramidal tract lesion. The ability to learn on both sides is greater during the first two months after the onset of the disability. There is less chance of learning occurring if the disability has been present longer than two months. Other factors which decreased learning ability were the presence of mental deterioration and bilateral pyramidal tract lesions.

Restitution of motor function following cerebral damage appears to occur chiefly during the first two months after injury. This restitution of function appears to be a spontaneous process and not necessarily the result of learning. 37 references. 3 figures. 8 tables.—*Author's abstract.*

80. *Diagnostic Localizing Value of Muscle Atrophy in Parietal Lobe Lesions.* ALEX SILVERSTEIN, Philadelphia, Pa. *Neurology*. 5:30-55, January 1955.

The author's interest in cerebral muscular atrophy was initiated in 1927 by the study of a tumor of the parietal lobe with intense hemiatrophy which disappeared simultaneously with other localizing signs following extirpation of the tumor. Since then, careful and systematic examination for atrophy in patients with brain lesions has revealed that atrophy is a frequent finding in parietal lesions. Its localizing value as a parietal lobe sign has been emphasized in several reports beginning with 1930.

Referring to these reports and corroborating the author's findings are a number of leading neurologists particularly in the French literature. This presentation

includes a study of: 10 cases of parietal tumors showing the typical triad of flaccid paralysis, atrophy, and sensory loss; 50 cases of infantile cerebral lesions, chiefly porencephaly, with illustrative cases showing variations in the location of the atrophy with corresponding pneumoencephalographic findings, and 50 cases of hemiplegia—28 cases with atrophy, 22 cases without atrophy.

From the foregoing data an attempt has been made to show that various types of lesions affecting the parietal lobe are associated with atrophy and wasting of the muscles in the contralateral extremity. The muscular atrophy, with quantitative diminution in faradic and galvanic stimulation, is detected in the early stages chiefly by palpation of muscles. Often the wasting occurs in combination with flaccid paralysis and sensory loss, particularly astereognosis. Skin changes, such as cold, pale, smooth, glossy skin with ironing-out of the finger markings, are usually associated with the muscle changes. In advanced cases the wasting may simulate spinal cord disease. It is concluded that cerebral amyotrophy is a localizing sign of great value in the diagnosis of lesions in the parietal lobe. Of special importance is its value when studying patients with clouded sensorium on whom an accurate neurologic examination cannot be performed. It is of help in distinguishing lesions in the parietal lobe from other areas of the brain. Equally important has been its value in the differential diagnosis from cerebral vascular disease, dementia paralytica, spinal cord conditions such as syringomyelia and poliomyelitis, conversion hysteria, and toxic states. To the neurosurgeon, atrophy may be of value in directing an accurate operative exposure. Furthermore, the recognition of the atrophy during the early phase of a suspected brain tumor may lead to prompt surgical intervention with more satisfactory removal of the growth and thus offer a better prognosis. 40 references. 28 figures. 3 tables.—*Author's abstract.*

81. *Studies of Aphasia in the Last Fifty Years. (Cinquante ans d'études sur l'aphasie.)* TH. ALAJOUANINE AND OL. SABOURAND. J. de psychol. norm. et path. 1-2: 146-174, 1954.

A review article discussing the various theories of aphasia presented in the last 50 years. 36 references.

82. *Migraine and Tension Headaches: A Clinical Study of Two Thousand Cases.* ARNOLD P. FRIEDMAN, THEODORE J. C. VON STORCH, AND H. HOUSTON MERRITT, New York, N. Y. Neurology, 4:773-787, October 1954.

The basic mechanism of most headaches is stimulation of pain sensitive structures in and around blood vessels. Two thousand patients with migraine and tension headaches have been studied at the Montefiore Hospital Headache Clinic during the past seven years. Migraine represents a definite clinical entity and may be defined as that form of headache that is characteristically paroxysmal, periodic, unilateral, and throbbing. It is preceded by an aura and is usually

associated with vomiting. A history of migraine in the family was present in 65 per cent of the patients studied. The personality pattern most commonly seen in this group consisted of characteristics of inflexibility and shyness in childhood, giving rise to adult perfectionism, rigidity, resentment, ambitiousness, and efficiency. Treatment of the patient with migraine is complex and requires individualization. Symptomatic treatment is best accomplished with ergotamine derivatives, in particular with "Cafergot," a compound of ergotamine and caffeine. Prevention of an attack is best accomplished by psychotherapy.

Tension headache is defined as that type of headache occurring in relation to constant or periodic emotional conflicts. These headaches are usually bilateral and may be accompanied by a variety of associated signs, including anxiety, nausea, and vomiting. Frequency and duration are variable but in general are much greater than those of migraine headaches. A family history of tension headache was present in 40 per cent of the patients. The same person may have both migraine and tension headaches. As in the case of migraine headaches, the best prophylaxis for tension headache is psychotherapy. Symptomatic relief can be obtained in most cases with analgesics and sedatives. 44 references. 2 figures.—*Author's abstract.*

CONVULSIVE DISORDERS

83. *Localization of Discharge in Temporal Lobe Automatism.* WILLIAM FEINDEL AND WILDER PENFIELD, Montreal, Canada. Arch. Neurol. & Psychiat. 72:605-630, November 1954.

In a series of 155 patients operated upon for the treatment of temporal lobe seizures, 121 (78 per cent) had attacks characterized by behavior automatism. This would include unresponsiveness, confusion, masticatory movements, and inappropriate but often elaborate behavior for which the patient is later amnesic.

From a detailed analysis of the seizure patterns of 50 patients with temporal lobe automatism, it is concluded that automatism may be preceded by no warning or by one or more warning features. There is, therefore, true ictal, as well as postictal, automatism. Among the variety of phenomena which may precede the automatism in the seizure pattern, the commonest are abdominal sensation, conscious confusion, tonic or adversive motor features, somatic sensation, and feelings of unreality. Conscious confusion followed by tonic or adversive motor features constitutes a common epileptic "march" leading into automatism.

Stimulation of the brain in the conscious patient undergoing surgical treatment for temporal lobe seizures has produced automatism and amnesia, sometimes with widespread suppression of the electrical activity of the cortex. Twelve cases are presented to illustrate these stimulation responses.

The area responsible for the initiation of behavior automatism appears to center in the periamygdaloid region. This includes the uncus, the amygdaloid nucleus,

the ventral claustrum, and the temporoinsular cortex deep in the anterior part of the Sylvian fissure. The anatomy of this complex region is reviewed.

It is pointed out that the periamygdaloid region is particularly susceptible to involvement by tentorial herniation, either by direct mechanical distortion of the tentorial edge or by interference with its blood supply by compression of the anterior choroidal artery. The present studies, therefore, are consistent with previous views that incisural sclerosis produced by tentorial herniation at birth is a cause for temporal lobe seizures occurring later in life.

Evidence is presented that the deep mesial structures of the temporal lobe are concerned in motor responses which may be additional to those derived from the Rolandic, supplementary motor, and second sensorimotor areas.

The term uncinate fits is inappropriate to describe attacks with olfactory and gustatory aura, since only about 5 per cent of patients with behavior automatism have such features. It is noted that temporal lobe seizures with behavior automatism correspond more closely, as regards both the seizure pattern and the site of the pathologic lesion, to the uncinate fits as described by Hughlings Jackson.

The present observations, together with subsequent animal experiments, would support the view that the claustralmygdaloid gray matter can be considered along with the diffuse projection systems of the thalamus and brain stem as a region capable of exerting diffuse regulatory effects on other parts of the brain. Evidence, in particular from the studies in man, indicate that the periamygdaloid region is also concerned in memory recording processes and the maintenance of the normal conscious state, both of which are clearly essential factors in the mechanism of behavior. 21 references. 14 figures. 2 tables.—*Author's abstract.*

DEGENERATIVE DISEASES OF THE NERVOUS SYSTEM

84. *Problem Situations in the Treatment of Paralysis Agitans.* LEWIS J. DOSHAY, New York, N. Y. J. A. M. A. 156:680-684, October 16, 1954.

Most patients with paralysis agitans (parkinsonism) are easy to treat. There are patients, nevertheless, who present problems that tax the ingenuity and patience of the physician, but can be managed with greater effectiveness if their problems are better understood. These problems may be discussed under three major headings: problems related to the symptoms of paralysis agitans, problems related to the personality of the patient, and problems related to intercurrent ailments.

Among the problems related to the symptoms of paralysis agitans are: rigidity, faulty posture, major tremor, akinesia, frozen states, poor body balance, speech disorders, emaciation, and insomnia. Rigidity is generally not difficult to manage with current antispasmodic agents, but in cases of neglect of suitable treatment of a rapid progression of rigidity, contractures at the ankles can produce a *palipes equinus* gait, with propulsion, festination, and ultimate invalidism. Regular goose-step exercises can effectively correct ankle contracture. Another serious and common site of contracture is at the knee; this can be successfully overcome by

leg suspension exercises. Another serious problem is contracture of the flexors of the spine, so that the head and trunk become bent almost to a right angle. Regular spinal extension exercises with an overhead pulley will help to counteract this. The new powerful antispasmodic, Cogentin, is a strong weapon against all contractures.

Major tremor can be counteracted by hyoscine or Benadryl, among patients that can tolerate these drugs. Parsitol is a new drug that has a powerful action against tremor for patients that can tolerate slight somnolence and blurring of vision. Akinesia is helped by Artane, Pagitane, or Dexedrine. Frozen or "glued" states of the muscles can be counteracted by Cogentin. Speech disorders can be corrected fully in almost every case by the vigorous use of lip exercises. Insomnia can be corrected by 25 or 50 mg. of Thorazine taken at bedtime. (Physiotherapy once, twice or more times a week should be used in every case of rigidity.)

Problems related to the personality and mental state of the patient require the individual attention of the physician. Proper orientation of the patient with regard to the nature and outlook of his illness and adequate reassurance help to obviate many emotional complications. Depressions arising from loss of employment, family stresses or severe disability may require psychotherapy, possibly shock therapy, or treatment with such drugs as reserpine or Thorazine.

Two of every 100 Parkinson patients have syphilis as well, 3 of every 100 suffer from diabetes, and some 5 per cent of cases suffer from arthritis. On the other hand, parkinsonism tends to keep hypertension and cardiac conditions under control for reasons as yet unclear. Cancer almost never occurs among these patients and neither does tuberculosis. 12 references.—*Author's abstract.*

ELECTROENCEPHALOGRAPHY

85. *Effect of Reserpine Upon the Human Electro-encephalogram.* A. D. DENNISON, JR., PHILIP T. WHITE, RICHARD B. MOORE, AND WILLIAM J. PIERCE, Indianapolis, Ind. *Neurology.* 5:56-58, January 1955.

The present study is concerned with the electro-encephalograms of 26 adults who are known hypertensives. Eleven of these patients had electro-encephalograms both before and after reserpine therapy. These patients, consisting of 10 females and 1 male, ranged in age from 22 to 62. All suffered from essential hypertension or mild to moderate hypertensive vascular disease. No cases with known cerebral vascular involvement were included. The patients received an average of 1 mg. of reserpine a day for a period of seven to eight months.

In an additional 16 patients, electro-encephalograms were recorded after at least six weeks of reserpine therapy consisting of an average total daily dosage of 1 mg. This group consisted of 9 females and 6 males ranging in age from 27 to 56.

It was found that no consistent effect from reserpine could be detected in the electro-encephalograms of 26 humans on chronic oral administration of the drug. This study supports the previously reported findings in lower animals. The in-

formation gathered gives no positive clue as to the mode or site of action of reserpine, or its differences or similarities to barbiturates. 3 references. 1 figure.—*Author's abstract.*

86. *Electro-encephalography and Psychometric Testing in Brain-Damaged Patients.*

ALBERT J. SILVERMAN, Durham, N. C., AND VIRGIL W. HARRIS, Denver, Colo.
J. Nerv. & Ment. Dis. 120:31-34, July-August 1954.

Psychologic tests and electro-encephalograms were assessed in patients who had had both examinations to determine their degree of accuracy in diagnosing brain damage. In accord with other investigations a significant decrease in the I. Q. was seen in patients diagnosed as "brain-damaged" on the basis of the psychologic tests. As "organicity" became more apparent on psychometric testing, the percentage of abnormal electro-encephalograms also increased. But a high number (67 per cent) of patients with nonorganic psychometrics still revealed abnormal electro-encephalograms. Since some investigators feel that many electro-encephalographic abnormalities in children are not due to structural lesions, the children's group was excluded, leaving a lower but still high figure of 50 per cent of those adults with nonorganic psychologicals having abnormal electro-encephalograms.

Conversely, only 11 per cent of those with normal electro-encephalograms had "organic" psychometrics. Patients with diffuse electro-encephalograms had fewer "organic" psychologicals than did those with focal electro-encephalographic disturbances.

Many reasons exist for the above data and these are delineated in the discussion. Both methods are fallible in diagnosing brain damage, but their areas of fallibility are different, hence both laboratory aids used together with the neurologic examination tend to give higher diagnostic accuracy. In addition, further studies, especially correlation with pathologic diagnoses are necessary to establish more definite validity to the signs of brain damage in both electro-encephalogram and psychometric tests. 13 references. 4 tables.—*Author's abstract.*

INTRACRANIAL TUMORS

87. *Evaluation of Ocular Signs and Symptoms in Verified Brain Tumors.* JAMES F. O'ROURKE AND NATHAN S. SCHLEZINGER, Philadelphia, Pa. J. A. M. A. 157:695-700, February 26, 1955.

One hundred patients presented for treatment of eye symptoms at an eye hospital, subsequently proven to have brain tumor, showed a much higher incidence of pituitary adenomas and a greatly reduced incidence of gliomas, with the majority of the latter located in the cerebellum. Almost 80 per cent of the eye hospital brain tumor group are of five types: pituitary, 29 per cent (adenomas 24 per cent, craniopharyngiomas 5 per cent); meningiomas, 21 per cent; cerebellar gliomas, 10 per cent; carcinomas of the nasopharynx, 10 per cent; acoustic neuromas, 8 per cent.

Anatomically, only the cerebellar gliomas and acoustic neuromas are removed from the sella turcica. Papilledema was observed in 42 per cent of the patients and optic atrophy in 58 per cent.

Allowing for the concurrence of these features, fundus changes were observed in almost every case by the time treatment for ocular distress was sought. The importance of a limited study, at least of the endocrine status, of cranial nerve integrity, and of the nasopharynx will often dictate the direction of further studies when the patient is first seen on the basis of visual complaints. Gliomas and metastatic tumors excepted, most of these lesions are accessible and, therefore, operable when prompt diagnosis is made. This is possible only with accurate evaluation of signs and symptoms at time of first visit. 16 references. 7 figures. 1 table.—*Author's abstract.*

TREATMENT

88. *Primidone in Mental Deficiency Practice.* D. S. SHARPE, Chertsey, England. Brit. M. J. 4888:627-629, September 11, 1954.

A six month trial of Primidone was made at Botleys Park Hospital, Chertsey, England. Thirty-eight epileptic mental defectives of varying ages and types were used. All showed grand mal epilepsy, 7 having a traumatic origin. Six patients had petit mal which had been confirmed by an electro-encephalogram. There was 1 case of tuberous sclerosis and several of a psychomotor-like type. The I. Q. ranged from inaccessible to 83 on the Wechsler scale.

Slow substitution of the previous medications was carried out. The average adult controlling dose of Primidone was 1 Gm. per day, though this was increased to 2 Gm. where necessary. Children over 7 years had approximately three quarters of the adult dose.

The results in grand mal epilepsy showed an improvement in 42.1 per cent, which includes no fits in 5.3 per cent; no change in 21.1 per cent; worse in 28.9 per cent, and treatment discontinued owing to severe deterioration in 7.9 per cent. The total percentage improvement was about equal (46.6 per cent and 53.3 per cent, respectively) for the two I. Q. ranges—50 to 70+ and 25 to 49, but only 12.5 per cent in the I. Q. range below 25.

The results in petit mal epilepsy were uniformly bad, both from the clinical aspect and from electro-encephalogram examination, in which all cases showed deterioration. There was little correlation between age and results, except in the 5 to 15 year age group, which showed good results. The behavior of adult patients was little changed, except in 1 case of psychomotor type who became very aggressive. The children on the whole were less manageable despite improvement, if any, in the epilepsy.

Few or no toxic signs of a serious nature were found and it was concluded that the drug was very suitable for both hospital and domiciliary practice. 5 references. 2 tables.—*Author's abstract.*

89. *Use of Milontin in the Control of Petit Mal Epilepsy.* CHARLES H. CARTER, Gainesville, Fla. *Neurology*, 4:935-937, December 1954.

In 81 cases of mixed types of epilepsy, seizures were decreased by 49 per cent in individuals with petit mal epilepsy with an average dose of 0.5 Gm. of Milontin three times daily. Up to 90 per cent of psychomotor seizures, proven by electroencephalograms, were controlled by Milontin in the same dosage. In mixed petit mal-grand mal patients, good control of the petit mal component was obtained in most cases, but in some instances the grand mal element was increased.

There were no side effects, except for 2 cases of drowsiness. Frequent blood and urine checks were entirely normal. Use of this drug is continuing and further reports will be made. 5 references. 1 table.—*Author's abstract.*

BOOK REVIEWS

Theory of Mental Tests. HAROLD GULLICKSEN. New York, Wiley, 1950. Pp. 486. Price \$6.00.

This book satisfies a long-existent need for a comprehensive and unified presentation of the theory underlying the construction and evaluation of mental tests.

The author first presents a concise treatment of the mathematic rationale applicable to error of measurement and reliability, the effects of test length upon reliability and validity, and the effects of group heterogeneity on measures of accuracy. Mr. Gullicksen then deals with the practical statistical problems of scoring, scaling and equating scores, setting up parallel tests, experimental methods of determining reliability, speed vs. power tests, weighting and differential prediction, and item selection.

Readers with minimum preparation in mathematics will find it desirable to omit parts of the book, but there is much to reward those who have some knowledge of statistical methods. This book is written primarily for workers in the field of achievement and aptitude test development. However, as the author points out, the techniques presented in this volume are applicable to other fields of scientific study, such as attitude measurement, personality assessment, and clinical diagnosis.
—Albert D. Annis, Ph.D.

Consciousness and Behavior: A Neural Analysis of Behavior and of Consciousness. JAMES T. CULBERTSON. Dubuque, Ia., W. C. Brown Co., 1951. Pp. 210. Price \$4.25.

This book presents a novel and progressive approach to the solution of methodological problems in psychologic theory. For the first time the method of symbolic logic is employed in this field; its demonstration of power in this area commands respect.

The author utilizes this form of mathematics in analyzing nerve-net systems, hypothetic neural arithmetic models, the transmission of data through neural

pathways, brain wave patterns, phenomena of the visual field such as form abstraction, the phi phenomenon, color vision, figure-ground relations, and memory and thought mechanisms. Attention is also devoted to how the hypothetic neural system can handle environmental-organism interactions, on simple levels at least.

The most significant feature of the book is the promise it holds for future extrapolation into other areas of study. The problems of quantification have plagued all those who work in the personality area. The usual mathematic methods sacrifice the dynamic essentials of the personality to gain precision. However, in order to preserve the integrity of a picture of human functioning, objectivity must all too often be sacrificed. The nonquantitative mathematic model that symbolic logic offers may gain us back the controls we have sacrificed, and yet present a far more faithful projection of the essential data than has hitherto been achieved.

One very simple application would be its employment in devising a better scoring system for the T. A. T. The personality data thus yielded would be invaluable and the gain in the objectivity of this test would be highly desirable.
—Herbert M. Schall, Ph.D.

Hyperostosis Crani. SHERWOOD MOORE, M.D. Springfield, Ill., Charles C Thomas, 1955. Pp. 226. Price \$10.50.

In the preparation of this book, the author has carefully examined thousands of x-ray films of the skull, medical records, and museum specimens, and conducted numerous clinical investigations. The voluminous bibliography, with quotations and comments by Dr. Moore, reveals the zeal with which he has approached the subject from every angle. Having followed Dr. Moore's publications on this subject for 20 years, I have acquired a healthy respect for his opinion. Nevertheless, and I say this with a great deal of hesitation, his current presentation does not succeed in altering one's conviction that hyperostosis crani is not a pathologic entity, but a histophysiologic anomaly, probably resulting from some aberrance of the calcium-phosphorus metabolism.

The author has not demonstrated any characteristic common denominator in the patients observed. Those concurrent conditions which he finds in certain groups are as readily found in groups which do not exhibit hyperostosis crani. On the other hand numerous cases of hyperostosis crani do not present any of the other factors which have been said to accompany this condition in the past.

Dr. Moore himself states that marked hyperostosis crani is frequently seen in healthy persons of youth and vigor. In a survey of nurse and medical students he observes that, "the skull changes of idiopathic hyperostosis are of frequent occurrence in otherwise healthy young women."

The volume is very interesting, but one feels that in spite of Professor Moore's effort to clarify the foggy atmosphere that has always surrounded the attempts at evaluation of the meaning of this condition, he has not succeeded in any appreciable degree.—Walson W. Eldridge, M.D.

The Jealous Child. EDWARD PODOLSKY, M.D. New York, Philosophical Library. Pp. 147. Price \$3.75.

This book is written in simple language designed to assist parents who are concerned about manifestations of jealousy in their children. Actually, Dr. Podolsky describes diverse problems of social adaptation under the general topic of jealousy, since any child with a difficulty might well be jealous of the child who doesn't have it.

The chapters deal with special problems of children with tuberculosis, diabetes, rheumatic heart disease, obesity, left-handedness, speech disorders, etc. In the social sphere there are chapters on "Jealousy and Sibling Rivalry," "The Only Child," "The Adopted Child," "The Child Whose Parents Are Divorced," "The Illegitimate Child," "The Neglected Twin," "The Stepchild," etc. Most of these chapters are repetitious and the more sophisticated parents may find the book too elementary.—*Edwin J. Kessler, M.D.*

The Michigan Picture Test. GWEN ANDREW, SAMUEL W. HARTWELL, MAX L. HUTT, AND RALPH E. WALTON. Chicago, Science Research Associates, Inc., 1953. Pp. 108. Price \$9.40.

The *Michigan Picture Test* is a projective personality technique for use with children 8 to 14 years of age. The monograph and accompanying test materials are the result of a research program on the evaluation of emotional reactions of children carried on since 1947 by the Michigan Department of Mental Health.

The test consists of 16 pictures. Four are used with boys only and four are used with girls, so that no more than 12 cards are presented to any one child. A short screening test can be administered using four core pictures. A method of scoring has been developed based on a structural analysis of comments and stories prompted by the stimulus cards. Normative data are presented based on a representative sample of two groups of children from a well-adjusted and poorly adjusted population.

The pictures have been carefully selected to present realistic but generally ambiguous situations sampling a variety of areas in real-life situations. The authors have faced the difficult problem of attempting to establish criteria to evaluate the effectiveness of the method. While much more remains to be done, the present study is a valuable addition to the investigations of the picture story type of projective technique.—*Margaret Mercer, Ph.D.*

Dynamic and Abnormal Psychology. W. S. TAYLOR. New York, American Book Co., 1954. Pp. 658. Price \$5.50.

This volume was designed as a text for college courses in abnormal psychology, as a supplementary text and reference work for other related psychology courses, and as a source of broad scope for independent readers. The term "dynamic" as used in the title refers to motivation, and "abnormal" to all failures of integration,

minor conflicts, psychoneuroses, or psychoses. Amentia is excluded, being regarded as a variation in endowment rather than a failure in integration.

An attempt was made to devote primary interest to more minor behavioral maladaptations. There is no emphasis on diagnosis or treatment of mental disorder. The aim is rather to survey the psychology of motivation and abnormal psychology as related to general psychology. In keeping with the goal of the author, there is no conventional division into chapters designated by diagnostic categories. The divisions, on the contrary, have, among others, such headings as "Historical Approach to Abnormal Psychology," "Special Topics in Motivation, Conflict, Dissociation, Learning, and Memory," "The Subconscious," "Attention and Perception," and "Reaction to Stress." These are indeed more suited to the stated purposes of the author.

Certain chapters of the volume merit special attention. The outline of the historical approach to abnormal psychology, although necessarily brief for such a work, represents a rather comprehensive sketch. The chapters devoted to motivation and learning are also well presented. The chapter devoted to the subconscious, however, lacks clarity. Furthermore, the illustrative examples utilizing fugue states, multiple personalities, automatic writing, hypnosis, and sleepwalking emphasize unusual phenomena with lesser attention to more readily observed manifestations of processes which are out of awareness.

The chapter on mental disorders presents the "incidence, courses, and characteristics of the principal mental disorders." There is little presentation of the concept of illness as a process, or of mental illness as a response to the conflicts and threats experienced by the individual in his daily living and associations with his fellow men. The statement is also made in this chapter that "psychosis and psychoneurosis are not mutually exclusive, in that some psychotics have psychoneuroses." The author's position on this question is not clear. Furthermore, this subject is indeed open to some question since many believe that psychosis and psychoneurosis represent quite different maladaptive responses to conflict, and are thus mutually exclusive. In keeping with the latter hypothesis, the "psychoneuroses" of the psychotic patient represent but other facets of his psychosis.

The volume, as a whole, is well organized and shows evidence of intensive investigation into the literature of this field. An ample bibliography for those who wish to investigate further certain areas is presented both in the footnotes and in the supplementary references. It may be recommended as a highly satisfactory text and reference work for courses both in psychology and sociology.—*Leon J. Epstein, M.D.*

JOURNAL OF CLINICAL
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&
QUARTERLY REVIEW OF
PSYCHIATRY AND NEUROLOGY

VOLUME XVI, NUMBER 3, JULY-SEPTEMBER, 1955

JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY

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* Nobel prize winner.

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JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY

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Clinical Psychopathologic Conferences are being included as a regular feature of the Journal. This section will attempt to further the attainment of more uniform clinical diagnostic evaluations which is so essential to the elucidation of correlations and associations between clinical, neurologic, psychologic, and biologic elements. Subsequent issues will present clinical case presentations illustrative of other psychophysiological disorders. These will be contributed by psychiatric hospitals, clinics, and psychiatrists throughout the country. Manuscripts together with accompanying illustrations should be forwarded to the JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY, 30 East 60th Street, New York, N. Y., Attention: Editor, Clinical Psychopathologic Conferences.

QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

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Incorporating the International Record of Psychiatry and Neurology

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Physiological Concomitants of Mescaline Intoxication

A STUDY OF THE EFFECTS UPON NORMAL SUBJECTS
TESTED WITH SUBMAXIMAL DOSES

George A. Feigen, Ph.D., and Gordon A. Alles, Ph.D.

DEPARTMENT OF PHYSIOLOGY, SCHOOL OF MEDICINE, STANFORD UNIVERSITY AND
KERCKHOFF LABORATORIES OF BIOLOGY, CALIFORNIA INSTITUTE OF TECHNOLOGY

Since the isolation of mescaline by Heffter, 1898, and his original description of its effects, the best known and most often studied property of this compound has been the production of visual color hallucinations in man. Apart from the characteristic color visions, Heffter also described slowing of the pulse, mydriasis, photophobia, vertigo and nausea, some occipital pain, and a distorted perception of time as concomitants following a dose of 150 mg. of mescaline hydrochloride. Although he observed some of these changes after taking 100 mg., Heffter was not certain of having experienced visual phenomena with the lower dose. The subsequent studies made by Beringer, 1927, upon some 60 persons showed that the dominant changes in sense function varied with the individual and, hence, that comparative studies with different dosages of mescaline would be required for each case.

Owing to these difficulties, the question of the comparative activities of the known alkaloids of peyote has not yet been conclusively studied in man. The problem of comparing the

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physiological effects of the other alkaloids of peyote or of related compounds is defined by the fact that the best known (and uniquely distinctive) physiological action of mescaline is its hallucinogenic effect. Since the full reproduction of this central phenomenon in man requires high dosage, frequently as much as 400 to 600 mg. of mescaline hydrochloride, the additional sequelae of such treatment are commonly so undesirable as to make it difficult or impossible to secure repeated trials in a given individual.

In 1940 the present authors wished to assess certain compounds, related in structure to mescaline, with respect to their central effects in man. An accidentally taken high dose of one of them brought about noncolored visual hallucinations, but there was no inclination to repeat the dosage in order to study the central effects of this drug. Because the prospect that conclusive studies of central phenomena could be made on the basis of subjective verbal reports was poor, and the repeated taking of such drugs to achieve this end was unattractive, a more objective systematic approach to the study of such central phenomena was planned and is here reported.

Since the initiation of our studies there has appeared a number of reports concerning the mescaline "psychosis." However, these have been limited in a large part to psychological analyses of verbal reports, with the view of drawing parallels between mescaline intoxication and schizophrenia (Tayleur Stockings, 1940); (Osmond, Smythies, 1952), and to the search for a hypothetical "M-substance" in schizophrenia (Hoffer, Osmond, Smythies, 1954). Apart from certain reports treating of changes in cortical potentials, notably the alpha rhythm (Chweitzer, Geblewicz, Liberson, 1937; Rubin, Malamud, Hope, 1942), very few descriptions have been made of the objective concomitants and such objective information as is available has not been quantitatively treated with respect to the nature and the severity of the subjective changes. The present report, based upon the experiences with mescaline taken in repeated submaximal doses by a small series of individuals, is a summary of our attempt to achieve this end.

EXPERIMENTAL

Seven normal male subjects, ranging from 20 to 40 years in age, were tested at the California Institute of Technology between 1940 and 1941. Aside from some observations of blood pressure and pulse rate, measurements of patellar reflex amplitude and of the areas of visual color-fields seemed most fruitful for obtaining objective physiological changes. The other indicators of central change were subjective impressions reported by the subjects. The subject was questioned about his mood and of alterations of negative after-imagery to colored cards, at frequent periods during the experiment.

METHODS

Following a light breakfast the subject appeared in the laboratory. He was seated in a reflex chair, and blood pressure and pulse rate were measured at that time and periodically following the oral administration of mescaline sulfate. The patellar reflex amplitude was recorded at regular intervals by the method of Alles and Feigen, 1942. Initially, and at one

PHYSIOLOGICAL CONCOMITANTS OF MESCALINE

and two hours after the reflex measurements, the subject walked to a Ferree-Rand perimeter where tracings were made of the visual field areas for red, green, and blue. Some observations of negative after-images were made after viewing red, green, and blue color cards. Two hours after taking the solution of the drug, the formal portion of the experiment was concluded. At regular intervals during the experiment measurements of convergence and visual acuity were made. General impressions of postural stability, gait, vertigo, nausea, excitability, and mood were recorded when such changes were noted, either by the observer or the subject.

To illustrate the range of variability encountered between subjects and to show the progressive changes in the development of objective phenomena and subjective experiences, the protocols of experiments on 2 subjects are presented. P. G. received doses of 100, 150, and 200 mg. on separate occasions. W. D. received the two lower doses, but not the higher dose, since he was sensitive to the hallucinatory phenomena, which were not desired in the present study.

Experiments with P. G.: A 22 year old who was a graduate student in the division of biology. Following 100 mg., no notable subjective effects occurred other than some inability to concentrate and a mild feeling of depression toward the end of the experiment. Blood pressure initially was 105/80 and readings as low as 95/80 were observed during the experimental period, but the fall was not consistent. The pulse, originally found to be 76 to 80, decreased to 60 after 40 minutes and remained there during later observations. An increase in the knee-jerk amplitude occurred within 40 minutes after taking the drug and was maximal at 100 and 120 minutes. There was some increase in visual color fields at one hour, being even greater at two hours, notably for the blue target, but not in the same proportion for the two eyes. Mydriasis was noted.

Following 150 mg., subjective effects were reported after 40 minutes and involved, chiefly, scintillation of light in the peripheral vision, together with some change in the negative after-image to red. At 100 minutes, color hallucinations began to appear, the subject reporting "purple scallops changing into a peach pit that persisted." At 80 minutes the subject had reported feeling cold flashes and "surges" of awareness occurring in relation to the blows delivered to the patellar tendon by the knee-jerk apparatus. Yawning was evident first at 40 minutes and increased at 80 minutes, at which time there was also an increase in verbosity.

Blood pressure was 92/70 initially and at 40 minutes, with a maximum of 100/80 at 100 and 120 minutes, at which time the pulse had diminished to 64 from an initial 68. Knee-jerk amplitude was significantly increased at 60 minutes and became even greater during the second hour. There was a notable increase in the blue color fields for both eyes at one hour, with further increase at two hours. The red and green fields varied somewhat during the experiment, but were slightly increased in both eyes at two hours. Mydriasis was noted.

With 200 mg., this subject reported flickering of light after 40 minutes, the scintillation effect persisting and being notable later. At 80 minutes after-imagery of viewed colors was less distinct and often not in the plane of regard. Color hallucinations persisted for several hours, the subject reporting seeing "purple bell towers" while listening to music. At 40

minutes he reported feeling cold flashes and increased tone in the forearms; these effects persisted with varying intensity throughout the experiment. Concentration became difficult at 80 minutes and continued to be poor for the rest of the experiment.

Initial blood pressure was 100/80, with slightly higher readings at 20 and 40 minutes, reaching a maximum of 110/95 at 80 and 100 minutes. The pulse rate increased from 72 to 76 to 80 during this same period. Amplitude of knee-jerk increased slightly at 40 minutes, and notably at 60 minutes, without further increase during the second hour. At 80 minutes the knee-jerk became flail-like and impairment of postural stability and gait were noted. At 100 minutes myoclonic movements of the facial muscles were also observed. A pronounced increase in the areas of all color fields was noted, the change being greater after two hours than at one hour, and most notable for blue. Mydriasis was evident. The changes in visual field are displayed in figure 1.

Experiments with W. D.: A 24 year old graduate student of biology, who was red-green color blind. After 100 mg. no marked subjective effects were noted. Some feeling of drowsiness and tiredness was reported at 40 minutes. At 60 minutes the subject had a few periods of uncontrollable laughter and said that "things seemed funny." At 100 minutes the subject was sleepy and a test of postural stability revealed a positive Romberg's sign. Blood pressure was initially 105/65, with a minimum of 102/70 at 40 minutes, and a maximum of

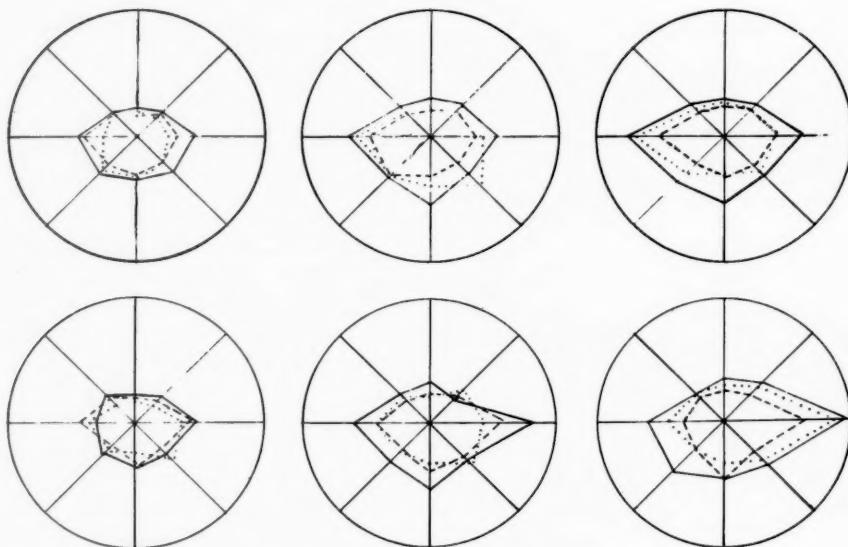


FIG. 1. Increase in visual color-fields after ingesting 200 mg. of mescaline sulfate. Subject P.G.: Red in dashed line, green in dotted line, and blue in full line. Upper row, right eye. Lower row, left eye. Left to right are control, one hour and two hour tracings.

PHYSIOLOGICAL CONCOMITANTS OF MESCALINE

118/75 at 80 minutes while the subject was feeling sleepy. Pulse rate decreased from 72 to 60 at 20 minutes, remaining at that value during the rest of the experiment. Increase in knee-jerk was noticed at 60 minutes, with a maximum at 100 minutes, declining somewhat at 120 minutes, as shown in figure 2. An increase in the visual fields for blue was noted at one hour and increased at two hours. The fields for red and green were not changed consistently. Mydriasis was observed.

After 150 mg. some vertigo was experienced at 20 minutes which became more severe at 80 minutes when the subject reported that "the room seemed to be revolving." The subject was seized by unaccountable laughter at 80 minutes. Respiration became somewhat labored at 40 minutes and a definite dyspnea occurred at 80 minutes which was accompanied by sighing respiration and much yawning. Romberg's sign was strongly positive; the subject tending to fall if not caught. In testing after-imagery at 80 minutes, the colors appeared hard for the subject to identify, and at two hours the subject experienced "indefinable scenes" that were "vivid, like technicolor pictures." Perception of time was disturbed and reasoning was difficult during the latter part of the experimental period.

Blood pressure was 110/70, initially, and ranged from 108/70 to 115/75 during the experiment. The initial pulse rate of 88 declined to a minimum of 72 at one hour and returned to 82 at two hours. Knee-jerk was increased at 40 minutes, became maximal at 80 minutes,

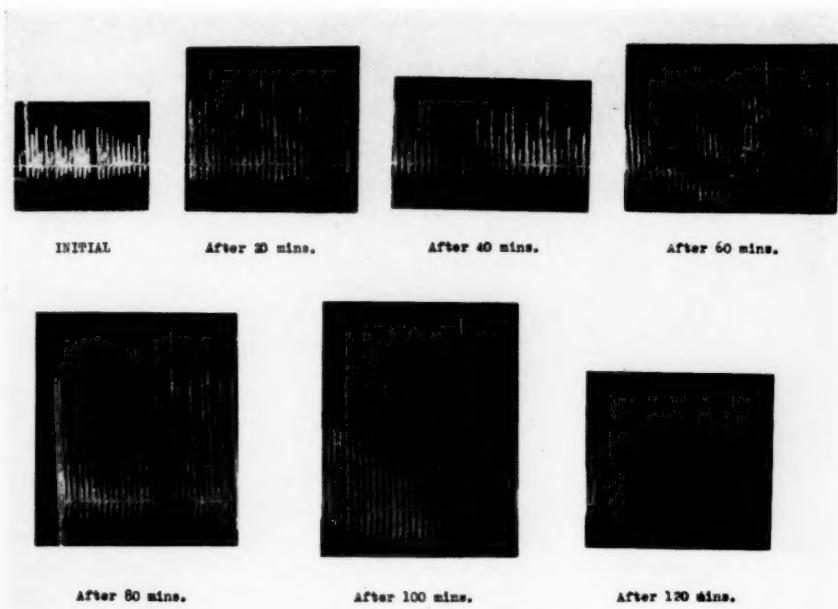


FIG. 2. Time-course of patellar reflex changes in a subject (W.D.) receiving 100 mg. mescaline sulfate.

and was still elevated at the end of the experiment. The subject exhibited pronounced tremors of the extremities while sitting for the visual field measurements. Although there appeared to be some increase in the blue field for the right eye, there was a slight decrease in the blue and red fields for the left eye. Mydriasis was present.

GENERAL RESULTS

Circulation. The changes in blood pressures observed in the group of 7 subjects after 100 to 200 mg. doses were small in magnitude and could not be correlated with dosage level administered. Systolic pressure measurements seemed to be about equally divided as to increase or decrease with respect to the control values, while pulse pressures were usually slightly decreased. The individual changes observed seem to result from emotional causes rather than from direct effects of the drug.

Patellar reflex. 100 mg. caused an increase in 5 of the 7 persons tested, beginning 20 to 60 minutes after the oral dose. 150 mg. caused a remarkable increase in the amplitude of the reflex, with a peak response at about 80 minutes. 200 mg. was given to 4 subjects only, 2 showed less peak response than they did after the 150 mg. dose, one showed more, and the other showed the same increase in response. A flail-like quality in the patellar reflex was noted, particularly with higher doses. It occurred in 2/7 after 100 mg., in 4/7 after 150 mg., and in 3/4 after 200 mg. Its appearance seemed to be related in time to the decline of proprioceptive control.

Visual fields. The results displayed below are relative to control measurements made initially on the same day and with the same subject. The visual field for blue was most commonly affected. Mydriasis was noted in each subject at every dose studied.

Dose	Color	Increase	Decrease
100 mg.	Red	1/7	2/7
	Green	2/7	2/7
	Blue	4/7	0/7
150 mg.	Red	5/7	0/7
	Green	4/7	1/7
	Blue	5/7	0/7
200 mg.	Red	3/4	0/4
	Green	3/4	0/4
	Blue	4/4	0/4

After-imagery. To exert some control over after-image formation, the subjects were required to look periodically at a set of large brilliantly colored cards cut in simple geometric designs. On some cards several colors were present in a design to enable the subject to report not only on the complementary color, but on any relative change in definition or brightness of the after-image.

PHYSIOLOGICAL CONCOMITANTS OF MESCALINE

Dose	Increased definition	Decreased definition
150 mg.	0/7	3/7
200 mg.	1/4	2/4

Visual hallucinations. These were found in 4/7 after the 100 mg. dose, in 4/7 after 150 mg., and in 3/4 after 200 mg.

Convergence and visual acuity. No changes were found with any of the subjects at any dosage tested.

Subjective temperature. Feelings of being cold or alternately hot and cold were commonly reported, particularly with the highest dosage taken.

Dose	Cold	Hot and Cold
100 mg.	1/7	1/7
150 mg.	1/7	0/7
200 mg.	3/4	0/4

Mood. Changes as reported by the individual were noted and are summarized as follows:

Dose	Exhilaration	Depression	Both
100 mg.	2/7	3/7	0/7
150 mg.	2/7	2/7	1/7
200 mg.	3/4	1/4	0/4

Changes in verbosity can be summarized:

Dose	Increase	Decrease	Both
100 mg.	3/7	0/7	0/7
150 mg.	2/7	1/7	1/7
200 mg.	1/4	0/4	0/4

Only one person out of the 7 taking the 100 and 150 mg. doses complained of feeling dizziness or nausea, while 2 of the 4 taking 200 mg. reported these sensations.

Gait and stability. Disorders of gait and postural stability were assessed when the subjects left the reflex chair to walk to the perimeter, at one and two hours after taking the mescaline dosage. The presence of Romberg's sign was determined by comparing the degree of body sway of the standing subject with eyes open and closed. Only one subject showed a frank Romberg's sign, though several exhibited postural instability.

Dose	Exaggerated gait	Postural instability
100 mg.	0/7	1/7
150 mg.	0/7	2/7
200 mg.	1/4	3/4

Motor activity and subjective tonus. Motor activity generally increased with the level of mescaline dosage. This ranged from purposeless fidgeting to the simultaneous isometric contraction of antagonists in the arms and legs. Some subjects reported feeling an increased muscular power, or of experiencing increases alternating with flaccidity. These changes did not correlate well with mood except at the 200 mg. dose level. An increase in amplitude of knee-jerk was found with each subject at every dose studied.

Dose	Motor activity		Subjective tonus		
	Increase	Decrease	Increase	Decrease	Both
100 mg.	0/7	1/7	0/7	1/7	1/7
150 mg.	2/7	1/7	3/7	1/7	0/7
200 mg.	4/4	0/4	3/4	0/7	1/7

DISCUSSION

Since studies such as these are not frequently made, it is desirable to compare our results with those summarized by Tayleur Stockings, 1940. In making a comparison, two basic differences must be kept in mind. We worked in the dosage range of 100 to 200 mg. of mescaline sulfate, while he studied the effects of 200 to 400 mg. Secondly, he offers no evaluation of the frequency of the particular responses mentioned, nor does he mention the number of subjects employed in his study. In spite of these differences, many of the impressions reported by his subjects agree well with experiences noted in some of ours.

The range of content of visual hallucinations experienced by our subjects was similar to that reported by Tayleur Stockings' 1940 group, though they did not have quite the bizarre quality and were of shorter duration. Auditory hallucinations were not observed in our group. Contrary to findings in his group, delusions of grandeur or of persecution were not experienced. Somatic delusions, characterized by mild temperature paresthesias and sensations of increased muscular turgor, were experienced. Depersonalization, which Tayleur Stockings considered characteristic of the intoxication, was not observed, though mild disturbances of thought were, such as increased loquaciousness and some increase in the flight of ideas.

Motor disturbances were observed in some of our subjects, but were manifested most frequently in postural and locomotor changes rather than in degrees of catatonia. Mood disturbances (euphoria or depression) were similar to those cited by Tayleur Stockings.

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Synesthesias were noted with 2 of our subjects. Disorders of sleep during the following night were occasionally reported.

Although the dosage range of mescaline used in the present study produced some central alterations in varying degree in all subjects, frank visual hallucinations were not a regular manifestation. The ability to evoke negative after-images, when present normally, was either unaffected or slightly depressed by the drug, and the changes noted were not clearly related to the presence of visual hallucinations. The notable changes in the visual apparatus were the regular appearance of mydriasis and the progressive increase with dosage in the number of subjects exhibiting an enlargement in the visual field, particularly for blue. Since some of the subjects showed a reduction in visual color areas with the lower mescaline doses, it appears that the effect of the compound on color vision is not primarily dependent on its influence on the size of the pupil.

One of the earliest objective changes regularly noted after the ingestion of even the lowest dosages of mescaline was the increase in amplitude of patellar reflex. The time of onset was usually decreased with higher doses, but the magnitude of the response seemed to reach a maximum, usually, with the 150 mg. dose. In many instances the reflex became flail-like during the second hour of the test.

Owing to a resurgence of interest in the problem of mescaline intoxication that has recently been aroused by the publication of popular accounts (Huxley, 1954) and of reports concerning its application to psychiatric investigations (Hoffer, Osmond, Smythies, 1954), a tendency has developed to regard the mescaline experience as an equivalent of schizophrenia. It is our view that detailed studies of the mescaline psychosis are worthwhile enterprises because they constitute an avenue for producing a definable and easily controllable model of a psychological disorder. However, as in the case of any model, be it electrical, mechanical, mathematical, or conceptual, there is always the danger of unsound analogical back-extrapolation from the similarity of effects to the identity of causes. Thus, the complicated natural history of schizophrenia may be speciously over-simplified (and a great deal of time and effort invested in the testing of unproductive hypotheses) by the search for a single chemical "M-substance" that might be produced in the body in consequence of metabolic errors in the synthesis, degradation, or detoxification of pressor amines.

It is difficult to overstate the need for accurate quantitative measurements of objective bodily functions during the mescaline experiments in order to enable the investigator to state with some degree of confidence that a given report is or is not a hallucination or illusion. A recent study (Grant and Feigen, 1954) performed on one of us showed a profound drop in skin temperature after taking a dose of 300 mg. This reduction, correlated with a feeling of cold, might easily have been mistaken for an illusion if continuous temperature recording had been omitted.

SUMMARY

A study was made of 100, 150, and 200 mg. oral doses of mescaline sulfate on 7 normal male subjects, with 3 not receiving the highest dose.

Amplitude of knee-jerk was increased with all doses, most greatly at the higher doses, but evident even when no changes in color vision or hallucinations were experienced.

Mydriasis was regularly evident, even when no other changes in vision were experienced.

The areas of color vision were increased in most subjects at doses exceeding 150 mg. of mescaline sulfate, with the most frequent increases in the blue color field.

None of the subjects showed marked changes in systemic cardio-vascular activities during the course of the experiments.

Postural reflexes were affected in several subjects, ranging from a slight exaggeration in gait to the appearance of a frank Romberg's sign.

Well-developed visual hallucinations occurred in but 3 of the 7 subjects, and milder hallucinations, such as light flashes in the peripheral vision, were noted by 3 others. Definite changes in mood, mild euphoria or depressions, occurred in all within the dose range studied. Anorexia or mild gastrointestinal discomfort was complained of by most of the subjects.

Except in one instance, there did not appear to be any deterioration of intellect under the influence of the drug. The subjects were cooperative and understood directions. Amusement, rather than alarm, was the response to some of the objective and subjective changes that occurred. Intellectual impairment did occur with one subject after receiving the 150 mg. dose. Owing to his virtual loss of contact under these conditions, further experiments with this subject were discontinued.

RESUMEN

Se hizo un estudio administrando por vía oral 100, 150 y 200 mg. de sulfato de mescalina a 7 hombres normales; 3 de ellos no recibieron la dosis máxima.

Con todas estas dosis aumentó la amplitud del reflejo rotuliano lo que fue más notorio con dosis mayores; se hicieron evidentes aunque no se experimentaron alteraciones en la visión de los colores o alucinaciones.

La midriasis se manifestó regularmente, aun cuando no se presentaron otros trastornos de la visión.

En la mayoría de los individuos aumentó el campo de la visión de los colores con dosis mayores de 150 mg. de sulfato de mescalina, predominando frecuentemente el aumento en el campo del color azul.

Ninguno de los sujetos presentó cambios notables de las actividades cardiovasculares generales durante el curso de los experimentos.

En varios de ellos se afectaron los reflejos posturales que oscilaron entre una ligera exageración de la marcha, hasta el franco aspecto de un signo de Romberg.

En solamente tres de los siete individuos, se presentaron alucinaciones visuales bien características, que fueron leves como resplandores de luz en la visión periférica. En todos se manifestaron cambios ostensibles en el humor, ligera euforia o depresión, con las dosis convenientes para este estudio. La mayoría de ellos se quejó de anorexia o de ligeros trastornos gastrointestinales.

No se observó deterioración intelectual bajo la acción del medicamento. Todos los sujetos

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fueron capaces de cooperar y de entender las órdenes. Diversión en vez de alarma, fue la respuesta que se obtuvo a los cambios objetivos y subjetivos que se presentaron. En uno de ellos acaeció un trastorno intelectual, después de la administración de una dosis de 150 mg. Debido a la virtual pérdida de contacto observada con los sujetos en estos estados, se interrumpieron otros experimentos.

RESUME

Une étude a été faite sur des doses orales de 100, 150 et 200 mg. de sulfate de mescaline chez 7 sujets normaux du sexe masculin, et chez 3 ne recevant pas la dose maximum.

L'amplitude des réflexes du genou augmenta avec chaque dose, d'une manière plus prononcée avec les doses élevées, mais évidente même quand aucun changement de la vision pour les couleurs ou des hallucinations se manifestèrent.

La mydriase était régulièrement évidente même quand aucun autre changement de la vue se manifestait. Les régions de la vision des couleurs augmentèrent chez la plupart des sujets recevant des doses ne dépassant pas 150 mg. de sulfate de mescaline, surtout dans la région bleue.

Aucun des sujets n'accusa des changements marqués des activités cardiovasculaires systémiques au cours des épreuves.

Les réflexes posturaux furent affectés chez plusieurs sujets, à partir d'une exagération légère dans la démarche à une apparence franche des signes de Romberg.

Des hallucinations visuelles bien développées survinrent chez seulement trois des sept sujets, et des hallucinations légères, telles que éclairs de lumière dans la vision périphérique, ont été notées chez trois autres. Des changements définis dans l'humeur, euphorie légère ou dépressions survinrent chez tous, aux doses étudiées. Presque tous se plaignirent d'anorexie ou de léger malaise gastro-intestinal.

A l'exception d'un cas, il ne parut pas y avoir de détérioration de l'intelligence sous l'influence de la drogue. Les sujets étaient coopératifs et comprenaient les directives. L'amusement plutôt que l'alarme fut la réaction de certains changements objectifs ou subjectifs qui survinrent. L'affaiblissement de l'intelligence survint chez un sujet après l'administration d'une dose de 150 mg. Par suite de la perte virtuelle de contact sous ces conditions, on cessa l'expérience chez ce sujet.

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The Pharmacology of Chlorpromazine

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Chlorpromazine is a new synthetic, nonbarbiturate central nervous system depressant, which because of its diverse and useful pharmacologic actions,¹ is being used in almost all fields of medicine. Its current applications include the control of nausea and vomiting,²⁻⁴ management of mental and emotional disturbances,⁵⁻⁶ and relief of intractable pain.⁷⁻⁸ The mounting interest among clinicians to explore further the utility of chlorpromazine in other conditions indicates that a review of its pharmacology would be in order and is, therefore, the motive for this report. Table I summarizes the physical and pharmacologic properties of chlorpromazine.

ABSORPTION AND EXCRETION

Chlorpromazine is readily absorbed whether given orally, parenterally, or rectally. When applied to the mucous membranes it produces local anesthesia similar to cocaine. The fate of the drug in the body is, however, poorly understood. Apparently it is quickly metabolized or deposited in the tissues, for Seibert,⁹ using photometric methods, was unable to demonstrate significant drug levels in plasma 20 minutes after giving large doses (150 mg.) to dogs. Determinations in psychiatric patients 90 minutes after the oral administration of 500 mg. revealed drug plasma levels of less than 1 mg. per cent, despite the fact that the patients had been taking daily doses of 2 Gm. for more than a week.

Furthermore, in these patients, less than 1 per cent of the drug was recovered from 24 hour urine samples. In vitro studies revealed that only 40 per cent of chlorpromazine was recovered from liver tissues (dog) incubated for two and a half hours with varying concentrations of the drug.

CARDIOVASCULAR SYSTEM

Animals: Giving chlorpromazine in progressively increasing doses to anesthetized dogs produced a sharp increase in pulse rate when levels of 1 to 5 mg./Kg. were reached. Usually cardiac output was not altered significantly until high doses were used, and then it decreased somewhat, in association with peripheral vasodilatation and a secondary reduction in blood pressure. Fall in blood pressure was fairly consistent when doses of 10 mg./Kg. were given, irrespective of change in cardiac output. This decrease, most accentuated immediately after the administration of the drug, was primarily a result of reduced peripheral resistance. This dual reduction of cardiac output and blood pressure is probably due to adrenergic blockade.

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TABLE I
Summary of Physical and Pharmacologic Properties of Chlorpromazine

Physical	Pharmacologic
<p>Chemical name: 10-(3-dimethylamino)-2-chlorophenothiazine, usually as HCl Molecular weight: 355.52 Melting range: 193-196 C. Appearance: Offwhite crystalline powder. Odor: Faintly amine Taste: Bitter; numbing effect on tongue Solubility: Water—one gram per ml. at 26 C. pH: 4.9 (5 per cent aqueous solution) somewhat photosensitive</p>	<ol style="list-style-type: none"> Depresses central and autonomic nervous systems. Augments the action of central nervous system depressants, such as: anesthetics, sedatives, narcotics, and alcohol as well as mephenesin, curare, and d-tubocurarine. Blocks apomorphine-induced emesis. Alters conditioned reflex in rats. Lowers body temperature and blood pressure slightly. Exhibits slight adrenolytic and weak antihistaminic activity. Relaxes isolated rabbit intestine rendered spastic with barium chloride. Fails to alter the pressor response following central vagal stimulation.

Electrocardiographic studies on dogs given 10 mg./Kg. showed some flattening of the T waves in some animals, but alterations were minimal and probably of little significance. One dog, however, showed a splintering of the R wave with a widening of the QRS complex and an increase in the QT interval. Larger doses produced marked tachycardia with electrocardiographic evidence of intraventricular block. Definite cardiac toxicity developed when a dose of 75 to 85 mg./Kg. was given over one or two hours; the equivalent of this dose in a man weighing 70 Kg. would be 5,000 mg.

Humans: Chlorpromazine reduces blood pressure in both normotensive and hypertensive patients, regardless of the route of administration. Giving the drug intravenously produces an almost immediate and profound fall in pressure which is lost after two to six hours. After intramuscular injection, the maximum fall in pressure usually occurs 30 to 40 minutes later; with oral therapy, 60 to 90 minutes later. A significant hypotensive response is less frequently observed after oral or intramuscular drug administration when the patient is recumbent. But if the patient stands up, the orthostatic hypotension becomes manifest.

Adrenergic blockade with chlorpromazine is incomplete, since patients given the drug (50 to 100 mg. intravenously) continue to respond to the vasoconstrictor effect of norepinephrine, although nearly twice the usual dose of the pressor agent is required. These conclusions are apparent from the data in table II. Bradycardia did not occur when norepinephrine was administered to patients who previously had been given chlorpromazine.

When chlorpromazine is given at regular intervals for prolonged periods of time, tolerance to the hypotensive effect develops so that after three to four weeks as much as 2 Gm. of chlorpromazine, given orally, will not lower blood pressure significantly in the majority

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of patients. Since tolerance to the hypotensive response also develops in patients with hypertension, chlorpromazine is of no value for the long term treatment of patients with essential hypertension.

Cardiac output is usually not altered by giving chlorpromazine intramuscularly if the patient is recumbent. However, administering it intravenously produces a sudden peripheral vasodilatation followed by an increase in heart rate and temporary increase in cardiac output. These changes are not marked, being of the same degree as those observed following the administration of ganglionic blocking agents to normals.

These observations are generally supported by Foster and his associates.¹⁰ They found that chlorpromazine given intravenously produced marked vasodilatation in the extremities,

TABLE II

Blood Pressure Response to Chlorpromazine and the Effect of Chlorpromazine on the Response to Norepinephrine

Patient No.	Dose and route chlor-promazine mg.	I. Mean blood pressure mm.Hg.				II. Norepinephrine before chlorpromazine			III. Norepinephrine after chlorpromazine				
		Control		Chlor-promazine		Dose γ/Kg./Min.	Mean blood pressure		Dose γ/Kg./Min.	Mean blood pressure			
		S	U	S	U		Cont	NE		Cont	NE		
1	25 I.V.	79	84	69	58	.192	83	108	.510	58	85		
2	50 I.V.	101	90	70	62	.380	97	125	.471	62	100		
3	50 I.V.	103	97	82	55	.260	98	122	.356	55	95		
4	50 I.V.	81	85	76	70	.220	85	112	.395	70	94		
5	25 I.V.	108	104	116	100	—	—	—	—	—	—		
6	60 I.V.	87	87	86	75	.221	90	114	.612	75	95		
7	50 I.V.	94	95	87	65	.150	88	120	.311	65	100		
8	50 I.V.	85	98	63	52	.278	87	117	.600	52	92		
9	25 I.V.	101	97	76	70	.398	101	127	.499	70	94		
10	50 I.M.	78	82	80	68	.178	80	114	.321	80	102		
11	50 I.M.	95	90	101	95	.254	95	115	.527	95	130		
Mean		44		92	92	82	70	.253	90	117	.460	68	99

Key to table: S = Supine.

U = Upright.

I.V. = Drug given intravenously over a 10 minute period.

I.M. = Drug given intramuscularly.

NE = Norepinephrine infusion.

Cont = Observations before norepinephrine infusion.

Mean blood pressure = Direct intra-arterial manometry.

The subjects in this series were given an infusion containing norepinephrine (4 γ/cc.) so as to raise the blood pressure 25 to 30 mm. Hg. They were then given 25 to 50 mg. of chlorpromazine either intramuscularly or intravenously. Thirty to 45 minutes later their blood pressure was again taken, in the upright and supine positions. Norepinephrine was then infused (with the patient supine) rapidly enough to raise the pressure 25 to 30 mm. Hg. again. The difference in the requirement of norepinephrine to raise blood pressure before and after chlorpromazine is indicated in column III.

a vasodilatation associated with hypotension and tachycardia, which became more marked in the orthostatic position and lasted four to six hours. The more rapidly the drug was administered, the more pronounced were the responses. When injected intra-arterially vasodilatation occurred, apparently a result of adrenergic blockade. It produced an even greater vasodilatation when given intravenously, a fact that suggests additional vasodilatory responses of central origin, possibly the vasomotor center.

Electrocardiographic studies, conducted in control subjects and in patients receiving the drug therapeutically, showed no definite evidence of irregularities resulting from chlorpromazine (25 to 50 mg.), orally or intramuscularly, in short and long term therapy.¹¹ Several patients exhibited a minor T wave alteration. One patient, who had diabetic acidosis associated with nausea, vomiting, and hypototassemia, developed a partial auricular-ventricular block (Wenckebach phenomena) while receiving chlorpromazine therapeutically. Although this persisted for several days, it could never be clearly ascertained whether the arrhythmia was associated with the drug or related to the underlying disease process and low serum potassium. None of the control subjects exhibited electrocardiographic irregularities following chlorpromazine.

EFFECT OF CHLORPROMAZINE ON RENAL HEMODYNAMICS IN DOGS EXPRESSED IN PERCENT OF CONTROL

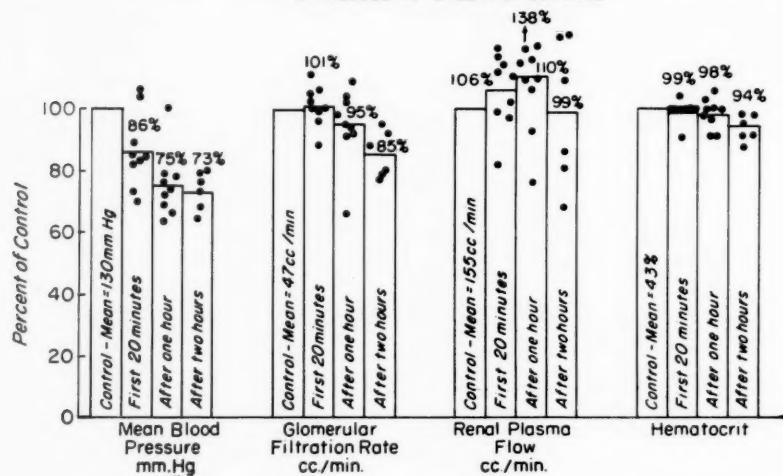


FIG. 1. Effect of chlorpromazine (50 mg., i.v.) on renal hemodynamics in anesthetized dogs. Creatinine was used to measure glomerular filtration rate and para-aminohippurate for renal plasma flow. Mean blood pressure was measured by a damped mercury manometer connected through a manifold to an indwelling arterial needle. Observations were made immediately after one hour and again after one and a half hours. The mean value for the group is expressed as average per cent of control for the group. Each dot (·) represents the value for each animal expressed in per cent of its own control.

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RENAL RESPONSE TO CHLORPROMAZINE WHEN ADMINISTERED TO MAN

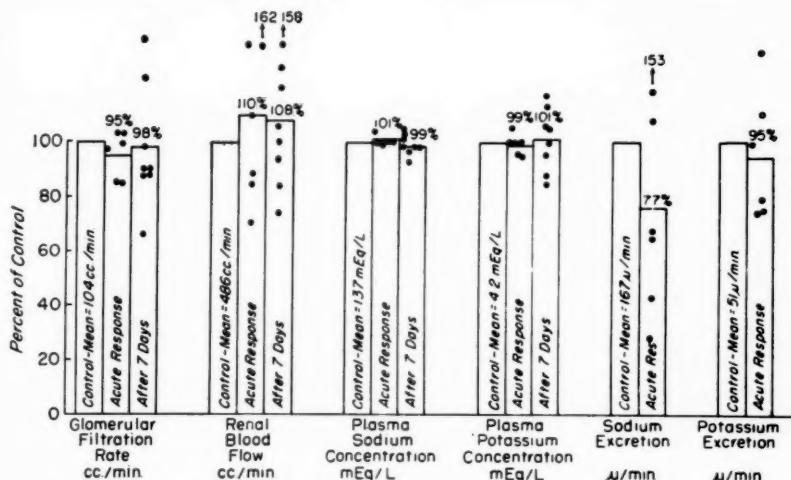


FIG. 2. Effects of chlorpromazine on renal hemodynamics and electrolyte excretion. Acute response = Response one hour after intravenous administration of 10 mg. of chlorpromazine. After 7 days = Response after daily oral administration for one week. The mean values for the group are expressed as average per cent of control for the group. Each dot (•) represents the value for each subject expressed in per cent of his own control.

Animals: Our studies on renal hemodynamics, summarized in figure 1, revealed that although blood pressure fell in most animals no significant alteration in glomerular filtration rate occurred. In one instance, however, where blood pressure decreased from 136 to 95 mm. Hg., the glomerular filtration rate decreased from 72 to 48 cc. per minute. Although renal plasma flow frequently varied from period to period after drug administration, this was not a constant response and, if anything, tended to increase. Some of the animals showed a moderate diuretic response associated with an increase in sodium excretion. There was no consistent effect on potassium excretion.

Humans: Differential renal function studies,¹¹ before and after the acute and chronic administration of chlorpromazine, revealed no consistent alteration of either the glomerular filtration rate or renal plasma flow. No significant changes were noted in phenolsulfonaphthalene excretion rates or in urinalyses. Analyses of plasma sodium and potassium showed no appreciable changes in electrolyte concentration after one week of therapy. In contrast to the findings in dogs, there was no evidence of increased sodium excretion. In all probability, the discrepancy is related to the dose given the dogs (3 to 5 mg./Kg.) which was considerably higher than that given patients. The data derived from the renal function studies are presented in figure 2.

CEREBRAL STUDIES INCLUDING HEMODYNAMIC

Cerebral hemodynamic studies, in normal control subjects, employing the nitrous oxide method of Kety and Schmidt¹² showed a decrease in cerebral blood flow in conjunction with a sharp reduction in blood pressure following the administration of chlorpromazine (50 mg., intravenously). However, the arteriovenous oxygen difference increased and, thus, maintained cerebral oxygen uptake. If the blood pressure was increased from the hypotensive levels with norepinephrine, then cerebral blood flow returned to pretreatment levels and cerebral oxygen uptake was not altered. If chlorpromazine was given intramuscularly, the blood pressure was usually not reduced significantly and cerebral blood flow was unaltered. These findings, given in figure 3, show that any change in cerebral blood flow or cerebral oxygen uptake following the administration of chlorpromazine is due to a fall in blood pressure, similar to that produced by giving potent hypotensive agents to normal individuals.

Electroencephalographic studies show that chlorpromazine produces a pattern similar to normal sleep in contrast to barbiturates which produce a rapid rhythm. Terzian¹³ has concluded that chlorpromazine depresses the reticular formation, particularly the sensory and autonomic spheres. The central action of chlorpromazine is further evidenced by its potentiation of anesthetic and sedatives.¹

Chlorpromazine potentiates opiates, anesthetics, and sedatives such as barbiturates. However, in the author's experience, this potentiation is extremely variable. Frequently, there is absolutely no potentiation; whereas in other instances the potentiation may be more than 100 per cent, i.e., the dose of the collateral agent can be reduced by 50 per cent and maintain an equivalent response. Therefore, when chlorpromazine is used for its potentiating effect on opiates, the minimal effective dose of the opiate must again be established by proper dose titration procedure. Tolerance to the sedative and soporific effect of chlorpromazine itself is usually lost after a week or two of continuous administration. Patients who receive the drug regularly for long periods of time frequently complain of inability to sleep at night. When this occurs, barbiturates are not particularly effective as soporific agents, a rather peculiar pharmacologic response.

The drug apparently inhibits the thermal regulatory center and for that reason has been used for surgical procedures employing controlled hypothermia. When used for this purpose, it helps to prevent shivering, a property common to many adrenergic blocking agents. With this in mind we have employed the drug in the treatment of patients with hyperpyrexia in an attempt to reduce the temperature. We found the drug of little, if any, value for this purpose.

SIDE REACTIONS OF CENTRAL NERVOUS SYSTEM ORIGIN

In high doses (1,600 mg.) chlorpromazine may cause confusion, hyperactivity, and disorganized behavior, but such reactions usually subside a few days after dosage is reduced. A parkinsonian-like syndrome has been observed in some patients receiving daily doses above 800 mg. In a series of 195 psychiatric patients we observed 14 cases.¹⁴ In 5 the

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CEREBRAL HEMODYNAMIC RESPONSE TO CHLORPROMAZINE IN A NORMAL SUBJECT —THE EFFECT OF NOREPINEPHRINE INFUSION ON THIS RESPONSE

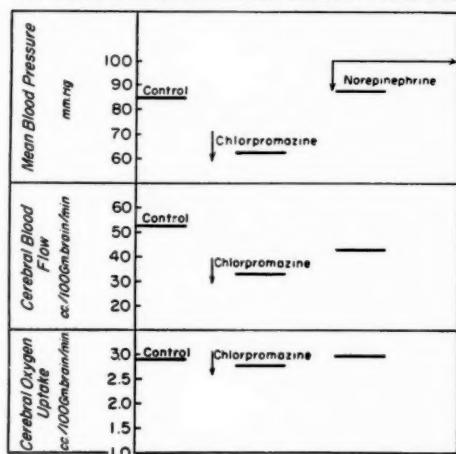


Fig. 3. Effect of chlorpromazine on mean blood pressure, cerebral blood flow, and cerebral oxygen uptake in a typical patient. As the mean blood pressure decreases, cerebral blood flow is reduced but not the oxygen uptake. When the blood pressure is then increased with norepinephrine, cerebral blood flow returns towards the control without altering oxygen uptake.

changes were mild: moderate tremor, muscular weakness, stooping posture, and diminution of accessory movements. Another 5 showed more severe changes with typical pill-rolling tremor, some difficulty in articulation, and increased salivation. Four developed a classical picture of postencephalitic parkinsonism with masked facies, open mouth, dripping saliva, cogwheel rigidity of the limbs, total loss of accessory movements, and extreme difficulty in articulating, dysphagia, and a typical posture and gait. Oddly enough, in spite of the physical handicaps, these psychiatric patients remained cheerful and their original disease showed no tendency to relapse. In mild and moderately severe cases, reduction of chlorpromazine dosage led to disappearance of the symptoms within a few days. In the 4 severe cases complete recovery was delayed for as long as one month.

RESPIRATORY SYSTEM

Chlorpromazine in small parenteral doses given to normal unanesthetized individuals appears to be a mild respiratory stimulant. However, as the dose is increased, respirations become shallow and irregular. The effect of chlorpromazine on arterial blood pH and blood gases is presented in table III. Despite the alterations in respiratory rhythm and depth there is no apparent effect on blood gas exchange in the lungs.

LIVER FUNCTION STUDIES

Studies with chlorpromazine in animals by Courvoisier et al¹ uncovered no evidence of hepatic toxicity. Our studies¹¹ consisting of thymol turbidity, serum bilirubin determinations, and bromsulfalein tests also failed to show evidence of hepatic toxicity in control

TABLE III
Effect of Chlorpromazine on Blood Gases

Patient No.	Arterial O ₂ *		Arterial CO ₂ *		Arterial pCO ₂ mm. Hg.		Venous pCO ₂ † mm. Hg.		Hematocrit		Dose and route chlorpromazine mg.
	C	D	C	D	C	D	C	D	C	D	
1	14.0	14.0	48.5	52.2	45	48	59	61	38	39	25 I.V.
2	18.6	19.3	43.8	43.6	41	43	56	45	47	47	50 I.V.
3	18.3	19.0	38.4	37.3	38	35	45	47	45	47	50 I.V.
4	16.4	15.4	49.5	50.8	44	44	57	52	41	37	50 I.V.
5	16.9	16.6	38.3	45.1	—	—	—	—	44	43	25 I.V.
6	14.7	14.7	50.2	49.8	44	39	49	49	39	36	60 I.V.
7	20.2	19.5	43.8	47.0	32	40	43	56	52	50	50 I.V.
8	16.1	15.6	49.5	51.3	46	51	56	56	41	39	50 I.V.
9	18.1	18.1	43.9	45.6	46	45	58	58	47	47	25 I.V.
10	16.7	17.1	41.0	42.3	37	37	46	48	46	46	50 I.M.
11	16.2	15.0	42.0	40.0	36	32	44	42	44	43	50 I.M.
Mean	16.9	16.8	44.4	45.9	41	41	51	51	44	43	44

Key to table: C = Control observation.

D = Observations made 30 to 45 minutes after the parenteral administration of chlorpromazine.

I.V. = Intravenously.

I.M. = Intramuscularly.

* = Arterial blood taken anaerobically from femoral artery.

† = Venous blood taken anaerobically from jugular bulb.

pCO₂ = Partial pressure of CO₂.

subjects or in patients receiving the drug, one or more weeks, for nausea and vomiting. Several of the patients had liver disease prior to receiving the drug. None of these showed any evidence of progressive hepatic dysfunction. However, it was noted that patients with hepatic disease showed an increased responsiveness to the drug and were particularly prone to exhibit sedation, probably as a result of the decreased rate of destruction of the drug by the liver.

Despite the absence of hepatic damage in controlled studies, jaundice has been observed fairly frequently. Kelsey and his associates¹⁵ have reported on 20 cases. The dosage of chlorpromazine in these cases is interesting in that it varied from 40 mg. per day for five days to 24,000 mg. given over a period of 30 days. Choloria and clay-colored stools were noted in all but 1 patient. Extreme pruritus was another common finding. Hyperpyrexia for a very brief period was observed in 5 of the 20 patients. Splenomegaly was absent in all patients but 1; hepatomegaly was present in 11.

Other concurrent effects seen in 13 of the 20 patients were nausea and vomiting, hypotension, myalgia, and anorexia without nausea. Epigastric tenderness was seen in 1 patient and drowsiness in another.

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The duration of toxic hepatitis is difficult to determine because of the shortness of follow-up. Clinical recovery occurred in all 20 patients, although abnormal hepatic function, as determined by laboratory studies, persisted in many. The two longest periods of abnormality were found in a patient who had previously had a cholecystectomy but normal initial liver function tests, and another patient who had a previous diagnosis of cirrhosis of the liver. These 2 cases may represent a continuation or exacerbation of underlying disease.

Liver function abnormalities presented a characteristic picture. The serum bilirubin was moderately elevated from 1.9 mg. per cent to a maximum of 12 mg. per cent in all cases. The cephalin flocculation tests were normal except in 2 cases. Thymol turbidity was normal except in 3 patients, being 8.0, 17.9, and 22.0 units, respectively, in these cases. The alkaline phosphatase values were definitely elevated to levels that are considered indicative of biliary obstruction in all patients. Albumin-globulin ratios were generally normal, indicating the absence of severe underlying chronic liver disease. Urobilinogen was present in abnormal quantities. Prothrombin activity was depressed in 3 patients and normal in the remainder. Of particular interest was the fact that blood urea nitrogen, which was studied in 10 patients, was found to be elevated in all but 2. An attempt was made to correlate clinical and laboratory features with the pathologic findings in the 7 cases in whom liver biopsies were taken. The cases appeared to show three types of histologic alterations.

Type 1. This type showed clinical evidence of parenchymal liver damage as indicated by the presence of elevated thymol turbidity and a prothrombin deficiency. In addition, there was moderate elevation of the alkaline phosphatase. The pathologic findings were indistinguishable from those of acute hepatitis. There were polymorphonuclear leukocytes, lymphocytes, and plasma cells infiltrating the periportal areas.

Type 2. This was the most common clinical type. These cases presented a clinical picture indistinguishable from obstructive jaundice in that there was always a moderate elevation of the alkaline phosphatase. None of the laboratory tests of parenchymal liver damage were abnormal. The illness was mild and there was prompt clinical recovery. The pathologic findings were those of diffuse inflammatory change associated with bile stasis and some evidence of liver cell regeneration.

Type 3. There were 2 patients who represented a type in which the clinical symptoms were more severe and prolonged. In 1 patient the laboratory tests for parenchymal liver damage were positive but had been normal prior to chlorpromazine therapy. Neither case showed a tendency toward reversal of the serum albumin-globulin ratio. Interestingly, both cases showed marked azotemia. The presence of abnormal serum protein was indicative of chronic liver disease and compatible with the pathologic findings of early cirrhosis.

GASTROINTESTINAL TRACT

Chlorpromazine inhibits gastrointestinal motility by its effect on the autonomic nervous system¹ as well as by its direct inhibitory effect on smooth muscles. In vitro studies re-

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vealed that chlorpromazine relaxes isolated rabbit intestine rendered spastic with barium chloride. When chlorpromazine is given to patients in large doses it produces rather marked constipation as a side reaction. Otherwise, no serious side reactions of gastrointestinal origin are known to the author. The effect of gastric secretions has not been well worked out as yet.

HEMATOPOIETIC SYSTEM

Studies including red and white blood cell count, hemoglobin determination, and a differential count in patients who took chlorpromazine (25 mg., orally, four times a day) showed no evidence of hematopoietic disturbances. Toxic granules were observed in the leukocytes of one subject, but the significance of this observation is not known. We have also seen 1 patient who developed agranulocytosis and died, while receiving in excess of 1,000 mg. a day.

TOXIC SKIN MANIFESTATIONS

Dermatitis appeared in 27 cases out of 412 being treated with relatively large doses (1,000 to 1,600 mg. per day) of chlorpromazine. In 2 the rash was of a maculopapular type. In 6 the area of distribution included the whole body. In others it was confined to the arms, particularly extensor surfaces, chest, neck, and forehead. Pruritus was marked. Two patients showed a generalized erythema multiform. One exhibited a localized nodular eruption on the phalanges, another patient developed an acniform eruption over the face with painful lesions on the gums and palate. Two patients suffered with a generalized exfoliative dermatitis. One was severely ill with high fever and delirium. He responded to ACTH.

Most, but not all, of these individuals gave a history of allergic response to other drugs, foods, etc. The dermatitis typically became manifest during the second week of treatment. Only 2 patients who developed dermatitis were receiving less than 100 mg. daily; above this level there was no correlation between dosage and incidence of dermatitis. No local skin reactions were noted at injection sites aside from induration with reddening of the overlying skin.

Following cessation of chlorpromazine the rashes usually cleared within one week. In a few patients pruritus persisted, particularly if the patient exposed himself to sunlight. Recently we observed that the rash often disappeared spontaneously despite continued drug administration. Pyribenzamine usually afforded adequate relief of the pruritus in those patients. Oddly enough, in those patients in whom chlorpromazine had been stopped, reinstitution of therapy after the skin had cleared did not lead to recurrence of the dermatitis in some patients.

RESUMEN

La clorpromazina se absorbe con facilidad tanto cuando se administra por vía oral como por la parenteral. Produce un descenso de la tensión arterial en los individuos normotensos

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e hipertensos. Los estudios electrocardiográficos no demuestran ninguna irregularidad debida al uso de este medicamento. Tampoco se observan uniformemente trastornos de la función renal.

El medicamento produce una disminución de la irrigación cerebral, no afectando la oxigenación del cerebro. Los estudios electroencefalográficos demuestran que la clorpromazina produce un cuadro similar al sueño normal. También "potencia" los opiáceos, anestésicos y sedantes. Entre las reacciones secundarias producidas por las dosis altas se halla la confusión, la hiperactividad y alteraciones de la conducta, casi todas las cuales desaparecen cuando se reduce la dosis o se interrumpe la terapia. No se ha puesto de manifiesto que se reproduzca intoxicación hepática aunque algunas veces se observa ictericia y trastornos gastrointestinales. No se presentan disrasias sanguíneas excepto algunas manifestaciones cutáneas transitorias que se han visto en unos pocos casos.

RESUME

La chlorpromazine est facilement absorbée par voie orale ou générale. La pression artérielle est réduite chez les malades normaux et hypertensifs. Des études par électrocardiographe ne démontrent aucune irrégularité provenant de la drogue. Il n'y a également aucun changement dans la fonction rénale.

Le médicament produit une baisse dans le flot sanguin cérébral mais les besoins d'oxygène du cerveau sont maintenus. Des études avec le EEG démontrent que la chlorpromazine produit un effet semblable à celui du sommeil. Elle peut potentier les opiacés, les anesthésiques et les sédatifs. Les effets secondaires avec une posologie élevée comprennent la confusion, l'hyperactivité et une conduite désorganisée; la plupart de ces effets disparaissent quand la posologie est réduite ou le traitement cesse. Il n'y a pas d'évidence de toxicité hépatique avec la drogue, quoique la jaunisse et quelques troubles gastro-intestinaux se voient dans certains cas. La drogue ne produit pas de troubles dans le sang, mais certaines manifestations dermatiques passagères apparaissent dans un nombre réduit des cas.

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Clinical Psychopathologic Conference

A Case of Infanticide Related to Psychomotor Automatism

PSYCHODYNAMIC, PHYSIOLOGICAL, FORENSIC, AND SOCILOGICAL CONSIDERATIONS

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I. THE IMMEDIATE FACTS RELATIVE TO THE ALLEGED CRIME

On September 18, 1952, J. H., an 18 year old, white, unmarried bookkeeper who lived in a small farming community, worked until noon when she returned to the rooming house where she had been living since her graduation from high school in June of the previous year. She did several personal duties, ate little or no supper, feeling somewhat unwell, and at about 9:30 p.m. she went to her room and diligently studied her homework for a business course she had begun several weeks before. About 11:45 she felt abdominal pains, attributed these to lack of food, and went to bed. About 12:45, as the pains continued, she became alarmed and telephoned a girl friend, M. H., to come over immediately. When M. H. arrived with a friend, J. H. took her aside and said without much excitement that she was pregnant. M. H. promised to talk to her own landlady about what might be done and left with the others to try to get a doctor. After M. H. left, the landlady asked J. H. if anything was wrong. Upon being reassured, the landlady returned to bed.

Feeling sharp abdominal pains, J. H. got up from the sofa and walked across the living room through the dining room to the stairs, a distance of approximately 25 to 30 feet. At the foot of the stairs she felt something fall from her body, go down the leg of her pajamas, and strike the floor with some violence. This was the moment at which her male infant was born. The umbilical cord was torn, and the baby made no cry or movement. J. H. picked it up and carried it to her room wrapped in her housecoat. Hearing M. H. downstairs, she left the infant lying on the floor of the room and quickly joined her. J. H. said she had discussed her pregnancy with the landlady and implied M. H. should not worry about the matter.

After M. H. left J. H. went back upstairs, may have moved the baby, and covered it with some clothing. The landlady came to her door a few moments later to inform her there was someone downstairs. M. H. had returned to pick up a billfold she had left behind. J. H. gave it to her and returned upstairs; the landlady was somewhat concerned and asked again what was wrong. J. H. excused herself, went to the bathroom, and passed the placenta

Proper names have been amended to protect the anonymity of the patient.

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which she flushed down the toilet. Meanwhile the landlady had turned on the hall lights, walked downstairs, and stepped into a puddle of blood at the foot of the stairs. When J. H. came down a few minutes later, her housecoat soiled with blood, the landlady asked for an explanation. The landlady's daughter was present and J. H. stated spontaneously that "Pat Young," a girl who had supposedly been with M. H., had given birth to a baby on that spot. She said the fictitious Pat and M. H. had taken the baby, wrapped in her housecoat, out to the car. They had gone away and come back to return J. H.'s housecoat.

After discussing the matter, J. H. excused herself, took some aspirin, and again returned to her room. She was vague about the details of her preparation for bed but thought she had changed her pajamas and put the soiled linen into a basket of dirty clothes. Her last waking memory was lying down on her bed, seeing the baby wrapped in her housecoat still on the floor, and turning from it.

The next morning J. H. woke feeling remarkably cheerful and buoyant. She put some soiled laundry in a suitcase, picked up the baby averting her eyes so she would not see its body, and put it into the suitcase. She had breakfast as usual in a snack bar and went to work, performing her usual duties that day.

After thinking about the incident, the landlady told her doctor who advised her to go to the police. About 3:00 p.m. a policeman called on J. H. at her place of work, talked with her for a short time, and left. After this interview, J. H. decided to go to her parent's home, about 10 miles away. In preparation for this she excused herself from work, returned to her rooming house, picked up the suitcase, and took it to the snack bar where she left it saying she would return for it later. At 5:00 p.m., she went to the snack bar, had a sandwich but left without the suitcase, and returned to her rooming house. She then made preparations to attend her business college classes that evening.

At 6:30 p.m. she was picked up by the police and questioned. The special deputy promised to protect her confidence and "keep it out of the papers" if she disclosed her story. She gave him a signed statement; at 10:30 p.m. she was admitted to the Community Hospital under guard.

The police found the baby in the suitcase at the snack bar where she had told them to look for it. A narrow, green plastic belt, identified as one of J. H.'s, was found tied about the baby's neck. This had not been mentioned by J. H. The autopsy showed the baby had died by a combination of exsanguination through the untied cord and strangulation by the belt.

At the hospital the police prosecutor and the chief of police told her about the strap that strangled the baby. J. H. was horrified and broke down denying any knowledge of how the strap got around the baby's neck. She was questioned intensively but refused to confess she had murdered the child.

The physician in charge described her as follows:

A well-developed, well-nourished white female of about 18 years in no acute distress. Temperature 98.8, pulse 76, respirations 18, blood pressure 120/80. The head, ears, eyes, nose, and throat were not remarkable. All mucous membranes had a good color. The neck was supple and thyroid was not palpable. Chest was

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clear to auscultation and percussion. The breasts were large, firm, and slightly tender. The nipples were dark and milky fluid was obtained on pressure. The heart was normal in size without murmurs and the rate regular. The abdomen was soft; liver, spleen, and kidneys were not palpable. There were no scars, peristalsis was normal. There was a mass extending from the pubis to the umbilicus that was fairly firm, moveable, and tender. Sterile pelvic examination revealed a slight second degree laceration in the lower midline. The labia were blue and edematous. There were several old, dark, small blood clots in the vagina. The part of the cervix seen was empty and appeared like a normal early postpartum cervix. The extremities showed a trace of pedal edema. Laboratory: Kline—negative, urine—essentially normal, hemoglobin—10 grams (65 per cent), white blood count—12,000 with normal differential.

The patient was treated with penicillin, ergotrate, ascorbic acid, stilbestrol, and routine postpartum care. The attending physician stated she was well physically with her uterus remaining firm and contracting daily. She was up and about the room from the second day, her temperature remained normal, she had no complaints, and was discharged on September 25 to continue moliron and stilbestrol.

The attending physician said she appeared, "Alert and cooperative at all times. Her attitude was one of indifference and she showed very little emotional concern."

On September 22, a first degree murder charge was filed against J. H. by the police chief charging she, "Purposely with premeditated malice did kill her infant son." On the same day, E. R. pleaded guilty in the Municipal Court to a charge of committing adultery with J. H. and was named by her as the father of the infant. He was 33 years old, the father of three children by his present wife and two by a previous wife. He told the court, "There were other men involved at the same time I was. I know I broke the law, but doubt very much if I am the father of that child. I ask lenience for the sake of my family." E. R. was not implicated in the murder of the child but was fined \$100 and given a 30 day jail sentence. The judge paradoxically stated the sentence was imposed chiefly to give the defendant an opportunity to think over the enormity of the situation.

A group of neighbors provided bail of \$20,000 and J. H. was permitted to return home on September 26.

II. PSYCHIATRIC STUDY

J. H. was referred to psychiatric study when her attending physician became alarmed at the possibility that her air of detachment indicated either an imminent psychotic breakdown or a suicidal attempt. Beyond that there was the recommendation by the legal counselor that psychiatric examination be performed in preparation for building up a case in her defense.

Her demeanor during her initial interview September 29, 11 days post partum, was characterized by reluctance, suspicion, rigidity of emotional control, and depression. Her eyes were downcast, her voice while clear was low, and she was frequently asked to repeat her statements. She was fully oriented in time, place, and situation. There were no psychotic ideas elicited as such, nor any evidence of autism. She was tense, and apprehensive almost to a point of panic, but gradually relaxed as she was permitted to answer at her own pace. Psychomotor activity was voluntarily inhibited and restricted. Insight seemed quite shallow and judgment limited. The girl presented what seemed to be a naive personality, manifesting shame, defensiveness, and hostility. She was certainly aware of the seriousness of the

charges against her and made pertinent comments when the doctor explained that he would need a letter of release from her to either the doctor that referred her or to the lawyer whom her family had engaged to protect her in court, if she wanted any portion of the findings on examination to be communicated to them. The history of the infanticide as already detailed was again related and the details she had told before confirmed. J. H. wept only briefly when she described her shock on being told that her belt was found about the neck of the baby. Neurologic examination showed no defect of the central or peripheral nervous system.

J. H. was reassured emphatically that the doctor was not an agent of the court or law, that he was primarily interested in her as a person who had gone through an exhausting emotional experience and who might need to be helped with her problems, both current and yet to arise. It was further added that some day she might want to understand her actions better, particularly those which led up to the event of the infanticide. With hesitation and still somewhat suspiciously, she agreed to further interviews under the condition that her attorney approve them.

At that stage certain problems seemed conspicuous. First, it was apparent, both in respect to further documentation of her problem and the evaluation of her personality, that she would have to be seen intensively. A proper doctor-patient relationship would have to be established and have certain obvious objectives: to uncover incidentally as far as this could be done, the truth of her claim to amnesia; define her personality structure; determine whether she was psychotic at the time the baby had died or at any time since, and offer constructive therapy to preserve the girl's ego and suggest an intelligent orientation as a basis for the future irrespective of the outcome of the case.

Interviews were held with the mother and father and the attorney. Written reports were solicited from the family physician, her employer, the minister of the church, the principal of the high school from which she graduated, several of her girl friends, an optometrist who knew her, and a lady for whom she had done baby sitting.

J. H. was born in 1934. She is the third sibling of five living children. The first child, a boy, had died at the age of 4 of cancer, resulting from an injury to his face. She has an older sister, a younger sister, and two younger brothers. The parents were known by their neighbors and in the community to be honest, diligent, hardworking, and religious. The father worked on his own farm except for a brief period when he did shop work. There was a close, warm, affectionate relationship among the members of the family which revolved about the father. The mother generally remained a bit aloof from the jollity and cordiality which he seemed to radiate and pass on to the children.

J. H. was closer to her father and exhibited an almost exaggerated tenderness to her siblings, particularly the two younger brothers whom she took care of from the time of their babyhood. Her older sister had been secretly married just before she completed nurse's training. She had a child four months after the marriage was announced and J. H. reacted to this experience as did the other members of the family, as though they had been much let down by her. J. H. stated, "We had all bragged her up so much we were hurt when she got married."

The mother stated she, "was always stubborn and protective of the younger children."

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She had a normal birth. There was a brief labor, she was fed at the breast for a short period and then continued on the bottle. At the age of six weeks she had pneumonia.

Her physical development was apparently normal in every respect. She began school at the age of five, was an average student in grade school, and belonged to the Girl Scouts for several years and the local 4-H club.

The principal of her high school wrote, "We knew the family as school patrons and neighbors over a four year period . . . they were an industrious family and maintained their home in the best traditions of Christian living. The mother and father were deeply interested in the welfare of their children. The whole family worked diligently to support themselves and provide for their future. They were interested in their children getting a good education and provided piano lessons for them."

J. H. took pride in being a tomboy as she grew up and enjoyed working with her father on farm chores. She considered going with boys as silly and held that opinion until her sophomore year in high school. An early ambition was to work at a children's home as a nurse's aid. It was clear that J. H. identified herself with her father and imitated, in a somewhat burlesque manner his forthrightness and honesty by generally insisting on her opinion. She took pride in her reputation for stubbornness and said, "I can argue for the fun of it. I am willing to give up only when I am right." There was no unusual shyness. She sang in choruses in school, spoke "pieces" in children's exercises in Sunday School, recited poetry when called upon with equanimity, and made the school choir in high school. She made friends readily, had a particularly close association with her older sister, was known as a happy child, and aside from her streaks of stubbornness, was never considered to manifest extremes of temperament.

In her first year at high school, she met a young man, D. M., who had done some work for her father. The father encouraged the courtship and for approximately two years the two were steady companions and in love. They discussed marriage and with few exceptions their social dates were exclusively with each other. One exception occurred while J. H. attended her senior class trip. At the time her fiancé was in the army. In the natural course of events, another boy in the group became her escort. J. H. did not tell him she had accepted this date, partly because she did not think the matter important enough to discuss and also because she suspected that if she did speak of it he might become jealous and place an erroneous interpretation on the event. J. H. graduated from high school in June, 1951, and soon after graduation took a job in a department store. She lived in town from that period until the day of her arrest.

In the early fall of 1951, D. M. returned home before being sent overseas. His brother, C., who had been on the trip to New York with J. H., mentioned that she had been with another boy. D. M. upbraided her and a quarrel of serious proportions ensued. She gave back his ring and was furious and dismayed. Aside from a rather timid overture by J. H. who sent D. M. a box at Christmas time "because all the girls did it," the relationship was over. Her father was disappointed, but no pressure was put upon her to force a reconciliation.

A: RESULTS OF NARCOANALYSIS

Because of the need for haste, a special narcoanalytic technique was employed with her consent. This consisted of placing her in a state of narcosis by pentothal or amytal administered continuously over a period of from one to three hours. There were six sessions; each was recorded on tape. The patient was maintained in the period of beginning recovery from the nadir of narcotic sleep as long as possible. This was the period which proved richest in the productivity of material most threatening to the ego.

In the first period of the interview, general questions relating to innocuous material in the past history which helped to round out the picture of her social development were asked. As she became relaxed, data of a more intimate nature concerning her past life, such as her attitude about siblings, menstruation, school chums, ambitions, fantasies, and sex experiences like masturbation and petting were evoked. She was allowed to fall asleep and then as she awakened, was questioned specifically about the events concerning her relationship with E. R. and the death of the child.

Under narcosis J. H. told of being severely depressed by the breakup of her romance with D. M. She felt unjustly accused, unappreciated, and devalued. Although she continued to work at the department store faithfully, she saw few friends and aside from week-end visits home, her life was lonely. Alternating between depression and hostility, J. H. was ripe for exacting vengeance. L. B., who had lived with J. H., teased her into meeting E. R. who worked at a filling station. E. R. urged J. H. to go out with him and when she agreed, called for her at the boarding house and took her for a drive about the countryside. He talked with her pleasantly and brought her to her residence. However, on the second date, he drove directly out to the country and ignoring her rather passive resistance, forced her to have sexual relations. This was her first experience of intercourse.

In her hypnagogic state, J. H. said, "I was so tired of staying at home. There was no kissing the first time, the second time there was. I suppose I was jealous of L. B. (who was popular and dating regularly). I was disappointed about D. M. If he didn't want me, what was the use?"

E. R. "came up and got me. He never said anything to me, no laughing after the first time. He didn't act like a friend, he would just go right out to the country. Each time I knew it was going to come and decided how I was going to stop him from it. I was going to tell him not to, but it was no good. He was stubborn, if he wanted to do it, he would do it."

"In the back of my mind I knew he was married and I was wrong, and I didn't seem to care. I never did return his kisses, not one meant anything to me. I enjoy a show, laughing, and joking, but when it comes to love-making, it doesn't mean a thing to me."

Although J. H. was passive in the sex relation, she acknowledged two episodes of desire followed by orgasm. Each such episode was followed by remorse and weeping.

She was asked whether she understood that her feelings about the sexual episodes with the older man were related to her despondency about D. M. She answered, "I don't want to make him to blame." Such a remark is in direct opposition to the projections of responsibility and error one would expect from a psychopathic or pathologic personality.

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Throughout her interviews, she blamed no one but herself; not the elder sister whom she identified with; not her father, who had supported D. M.; not D. M. who had deserted her, not L. B. who had arranged for her to date E. R., and not E. R., whom she understood was simply, "That type of a man, and could not be expected to act differently."

She had used E. R. to actually deprecate and degrade herself, as D. M. had by his insinuations during the quarrel. This also served her need for a fantasized vindictive triumph over all men, D. M. and her father in particular. The sexual relationship simultaneously answered her masochistic need for self-punishment, mobilizing as it did, her guilt.

Under narcoanalysis, she told virtually the same story concerning the events of September 18 as she had while fully conscious. She admitted, however, that she wanted the baby to die because it imperiled her job. She said she dreaded knowing the truth if she had really killed the infant, and stated she could not bear to think herself capable of murdering it. She stated that she loved children, that they meant everything to her, and that people trusted her with their children. She went on to say, in this particular session, "I will never let a man touch me again, not even go with one. I will just work," and reacted with weeping.

Although on several occasions, the material was thoroughly searched and many details of her associations with D. M., her relations with E. R., and incidents revolving about her family life which were quite painful in recollection were obtained, at no time was she able to recall strangling the infant. She reacted violently when the incident of being told that the baby was strangled by a belt was reenacted with her. The shock and surprise evinced while under sedation could not have been malingered.

While giving further information about her background, she told of an incident which had occurred in the seventh grade. She said, "I was walking with some girls, and I started walking to some steps that seemed to move. I walked in the wrong direction, they grabbed me and I made a joke of it." This was considered an important detail, since she had previously denied epilepsy or acts of automatism. When confronted with this information while she was conscious, she remembered the incident and was able to describe at least one blackout spell when she suffered double vision and became weak in the knees. Such episodes in an attenuated form had been experienced while reading or watching television as often as two or three times per month. When asked when the last episode had occurred, she said, "Today, I had one of these spells when you were about to call me. I thought if you did I couldn't even get up, I felt so swimmy. I was looking at a magazine and a picture of a girl at the telephone and I couldn't even read it. It lasted a little while." The name of a friend who had been with J. H. at the time the aforementioned incident had occurred, M. G., was submitted to the attorney. J. H. did not remember this name while conscious, but it was evoked in her next narcoanalytic session. The data were later confirmed.

Mrs. H. remembered an incident when J. H. was about 14 years of age. She had gone on a trip to Georgia and caused mild annoyance to the family on her return when she was unable to recall any details of the trip. Apparently the mother had from time to time worried about this incident and speculated as to its significance. She said, "She forgets the things you wouldn't think a girl her age would."

Authorities in electroencephalography¹⁻³ indicated that electroencephalographic trac-

ings alone are not sufficiently dependable for the absolute determination of epilepsy. However, with activation and careful multi-lead recording techniques 95 per cent of patients with seizures will have abnormal electroencephalograms.⁴ Therefore, it seemed important to perform the electroencephalogram in this case.

B. ELECTROENCEPHALOGRAPHIC FINDINGS

The first test was taken on October 16 and demonstrated a moderately severe paroxysmal cortical dysrhythmia with spike activity in the frontal and temporal regions. This was somewhat accented on the right side as compared with the left (fig. 1). Hyperventilation produced high voltage complex slow wave activity which spread paroxysmally across the cortex (fig. 2).*

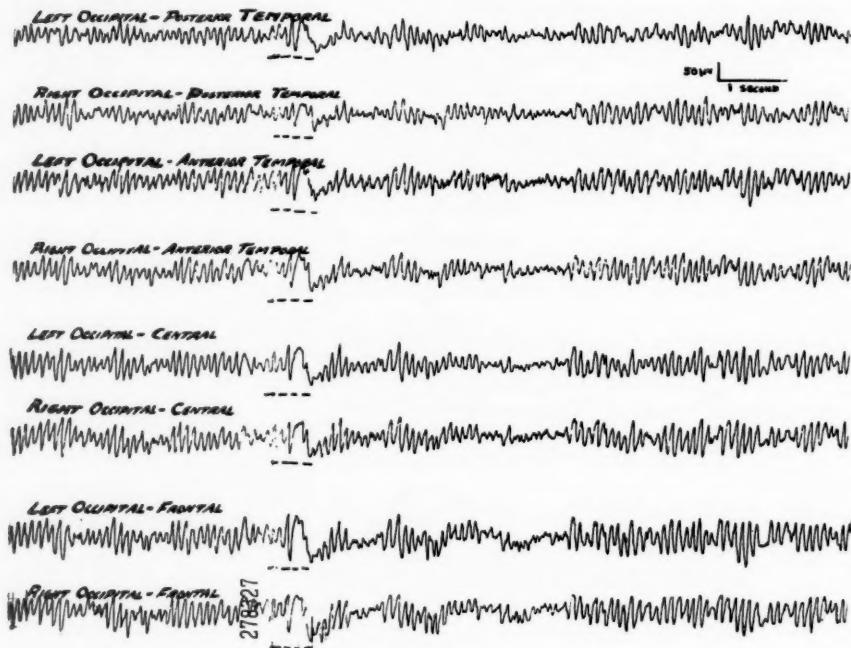


Fig. 1A. Prevailing alpha 8.5 to 10 per second. Average amplitude 40 to 70 microvolts. Note spike and round wave paroxysm as outlined affecting the entire tested cortex. The appearance of the record is somewhat spiky.

* Figure 2, courtesy of Dr. Andre A. Weil.

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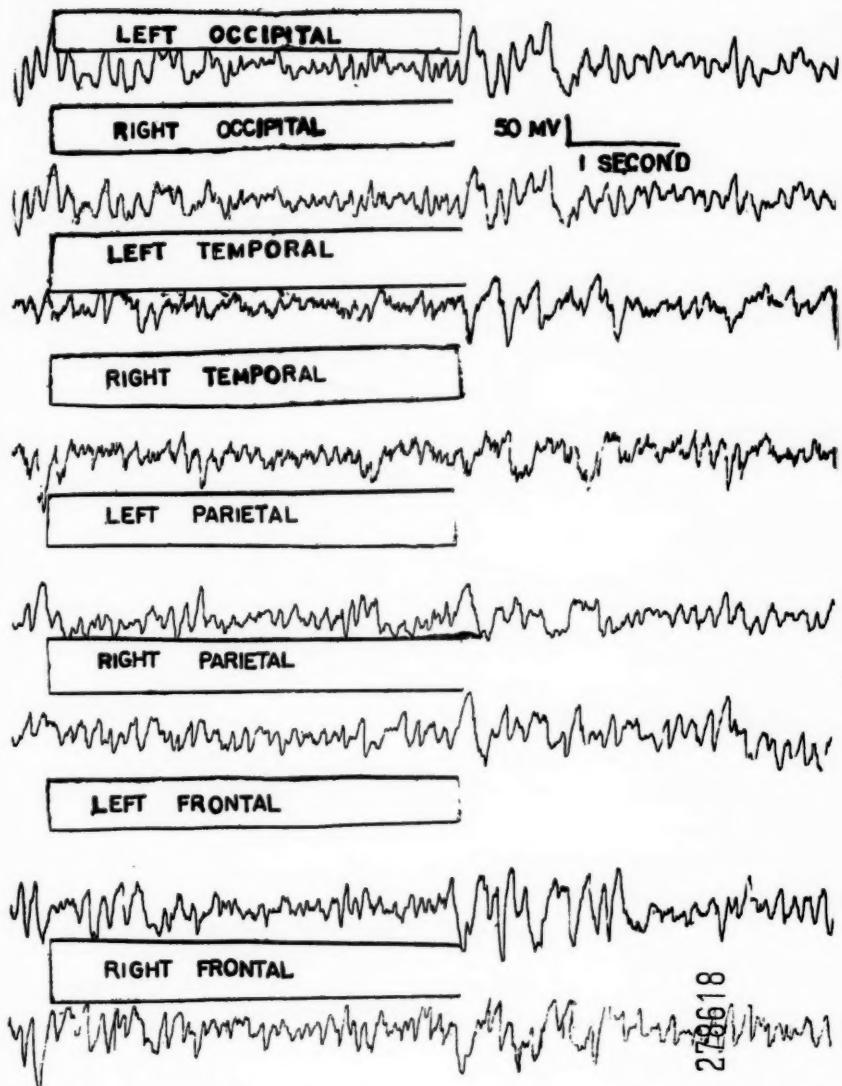


Fig. 1B. Hyperventilation 1 minute. 3.5 to 5 per second, peak and spike waves most apparent in the frontal and occipital areas. Although there are variations, the activity is, in general, synchronous bilaterally.

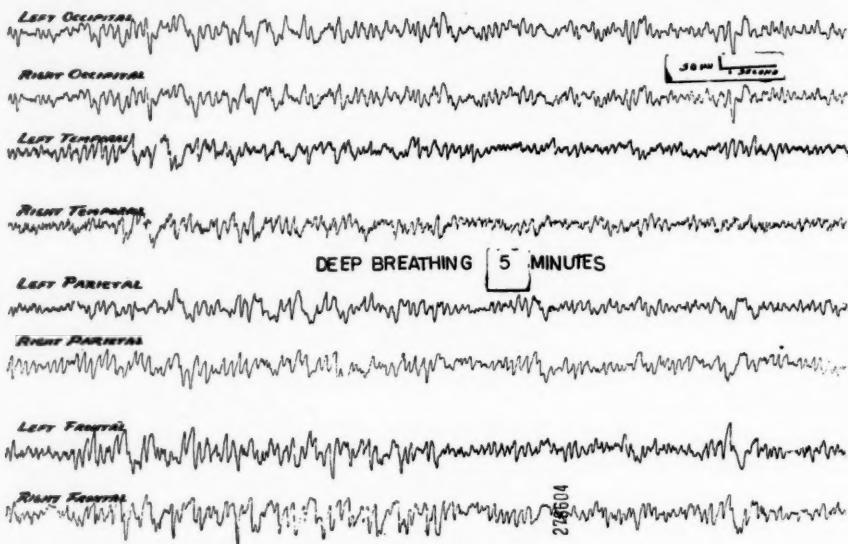


Fig. 1C. Hyperventilation 5 minutes. Low per cent time of alpha activity. Increase in the per cent time of 3.5 to 6 per second peak waves. Numerous fast tiny spikes appear in the temporal-parietal areas bilaterally, more evident on the right.

Because of the legal importance of the findings, the attorney was urged to solicit an independent laboratory for another test. This was done by Dr. André Weil on November 12, 1952. The clinical interpretation of his record was, "Bitemporal and anterior temporal paroxysmal firing (activated by hyperventilation) which finding is indicative of temporal lobe epilepsy probably psychomotor," (fig. 3). Dr. Weil's record also showed spike waves, somewhat accentuated in the right hemisphere as compared to the left.

A third electroencephalogram was performed December 26 after the patient had been taking two capsules of sodium dilantin per day for several weeks. This record showed less emphasis of spike and slow waves in the right hemisphere. However, paroxysmal activity was again recognized particularly in the frontal-temporal areas bilaterally, some of which resemble petit mal complexes.

C. PHYSIOLOGIC TEST FINDINGS

The following psychologic tests were administered by Bill Barkley, Ph.D.: the Rorschach, Szondi, the Draw-A-Person, the Roth sentence completion tests, and the Visual Bender Gestalt. It was reported that:

"The patient was very quiet, but passively cooperative during the entire testing period, but she appeared tired, weary, and constantly preoccupied. The tests indicate that the pa-

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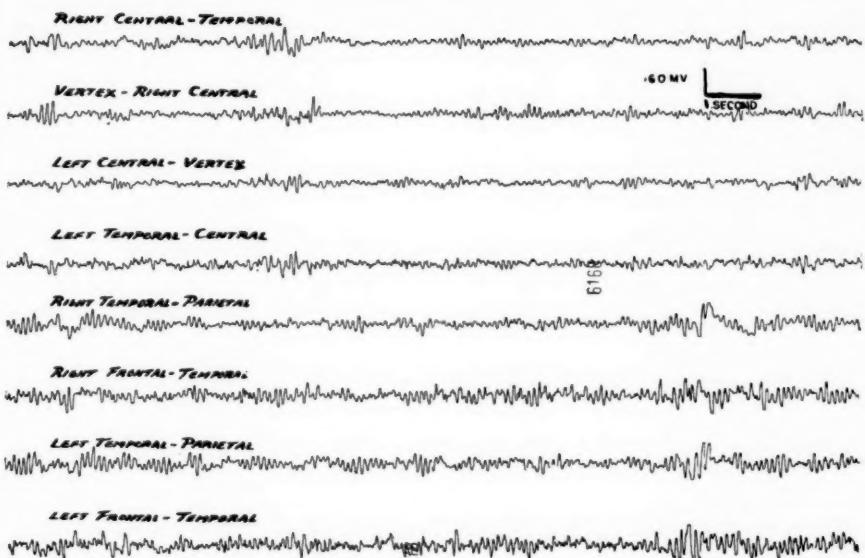


Fig. 2A. Nine per second ragged activity with change of pace. Bitemporal temporal-central 8 per second bursts.

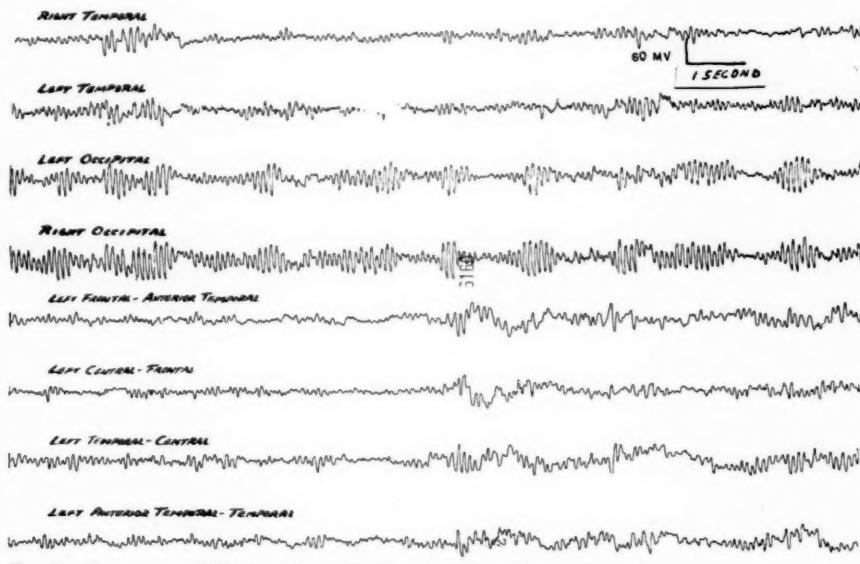


Fig. 2B. Sharp waves of 75 microvolts amplitude over the frontal-temporal areas.

DEEP BREATHING : 1 MINUTE

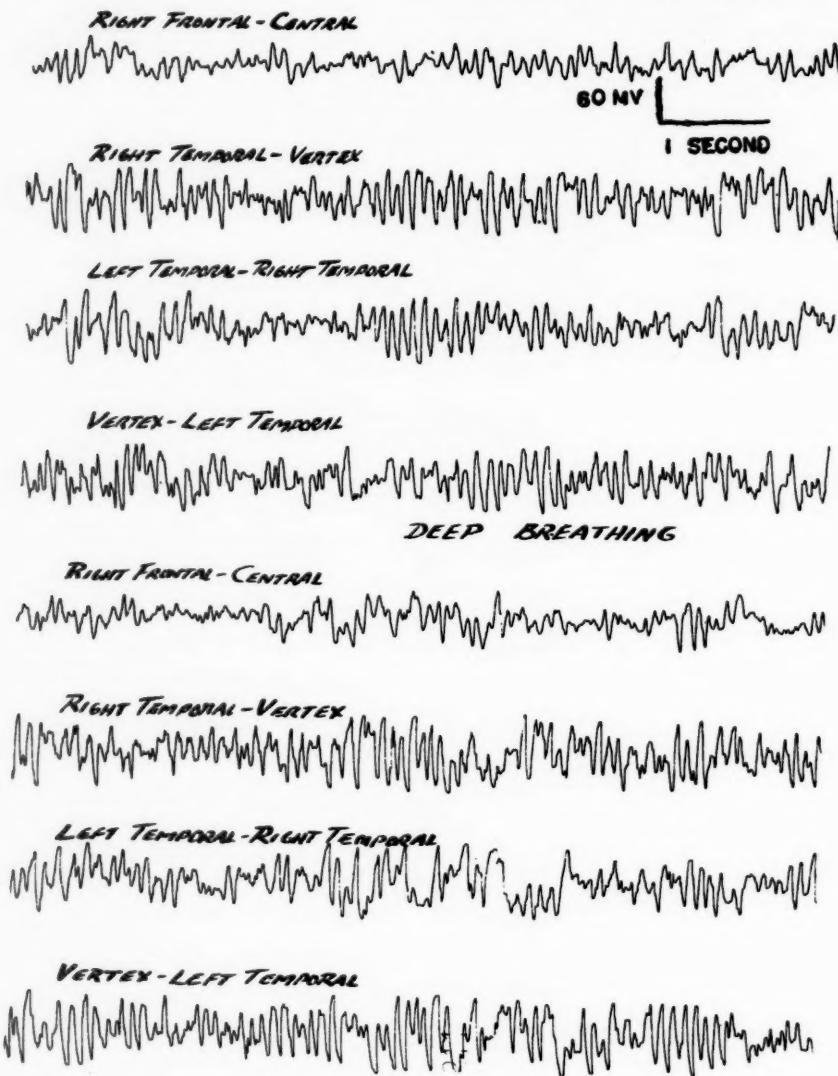


Fig. 2C. Hyperventilation 1 minute. Bitemporal spike build-up with an inconstant left and right temporal phase reversal. Voltage, 100 microvolts.

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tient is of at least average intelligence, but at the present time is functioning far below her basic capacity level. Organizational intelligence and general reasoning ability, so important in every day living, has been completely subjugated by her tidal wave of emotions. The emotional picture on the surface is one of blandness, rigid control, constriction, and resignation. But this is a cover for the underlying turmoil of inner conflict, strong aggressive urges, potential explosiveness, and general immature bewilderment.

"At the present time the patient is in contact with reality, but the picture is one of marked ethical control which is holding down the strong aggressive urges which can break through. She is very immature with strong feelings of inferiority and a very low degree of ego strength. Her concept of the world about her has become quite distorted and her interpersonal relationships are very poor. She is hostile toward men, she is fearful of her own inner urges, and feels driven by undefinable forces. Her behavior, generally speaking, is paroxysmal. In view of the strong sadomasochistic elements present here, as well as high degree of inner turmoil, she is potentially suicidal.

"The over-all picture is one of a psychotic depression in remission. In view of her paroxysmal behavior it is felt that she no doubt became increasingly more depressed because of

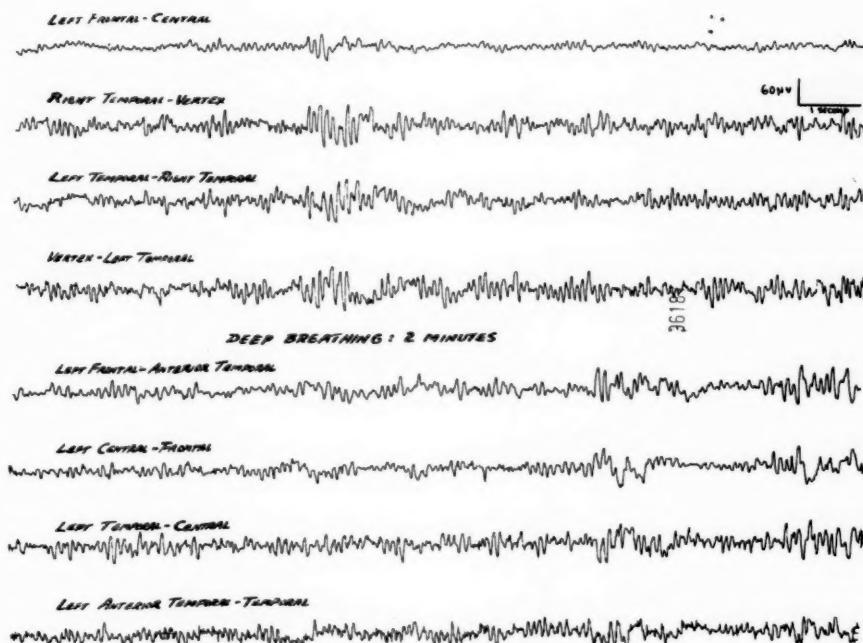


Fig. 2D. Hyperventilation 2 minutes. Bitemporal and anterior temporal paroxysmal firing.

VICTOR M. VICTOROFF

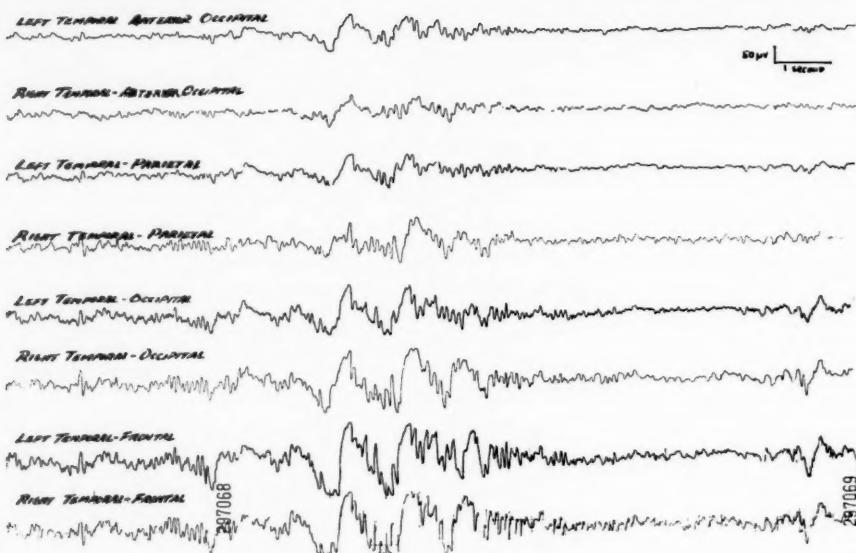


Fig. 3A. Eight to 13 per second alpha activity, 10 to 15 microvolts amplitude. Peak wave paroxysms appear with greatest amplitude projected anteriorward affecting the entire tested cortex but showing the greatest per cent time of spiky activity in the temporal areas.

the problem she was facing and that a psychotic break occurred at the time she committed the crime for which she is being held.

"Even though the patient is not psychotic at the present time, it is felt that she is most emotionally unstable and psychiatric treatment should be recommended. Care should be taken to avoid possible suicide."

III. ANALYSIS AND COMMENT

A. Psychodynamic Mechanisms

There is little in J. H.'s history which indicates an elective tendency to hysteria prior to the events of her pregnancy, though the tendency to invoke this neurotic device was undoubtedly latent. There is no doubt that she had negated her femininity in an attempt to identify herself with her father quite early in her development. Her exaggerated concern and jealous care of her siblings, especially the two younger brothers, was an acting out of her denial of sibling rivalry. It was a reproof to her mother whom she didn't consider fond enough, and constituted, in the adolescent Oedipal struggle, a bid to replace the mother in the affection of the father. However, her developing love for D. M. was a sign that mature adjustment was on the way and a satisfactory resolution of her dilemma might have resulted had it not been blocked by the scornful repudiation by D. M. of her worth as a woman.

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She became almost obsessively absorbed in her job, but because of loss of ego strength could not invest further libido in the attempt to resolve her adolescent problem. She suffered grief at losing an important love object, D. M. Her need for vindictive revenge to satisfy her hostility was balanced by self-destructive urges prepared to destroy the personality no longer valuable to D. M. or to herself.

E. R., the older man of whom she said, "At first I thought he was somewhat like my father," was first accepted as a father surrogate. However, when his sexual advances became urgent, he provided a source from whom she could exact her vengeance, commit symbolic suicide, realize her previously repressed sexual goals, commit the ultimate crime—incest with the proxy father, and mobilize her guilt in the ego's attempt to punish, and then by reawakened remorse, to redeem itself.

Frightened by the brief flare of primitive physical sexual gratification she had obtained on one or two occasions with E. R., she finally repudiated him. By a process of both active suppression and unconscious repression, she manifested hysterical negation of her pregnancy virtually throughout the gestation. When asked by her employer whether she intended to continue her work for at least a year she assured him she would. She enrolled in a business college course two weeks before the birth of the infant and was preparing to attend class the night after the baby died.

The patient alternated between keeping her pregnancy a secret and taking her family into her confidence. To have admitted she was pregnant would have meant most

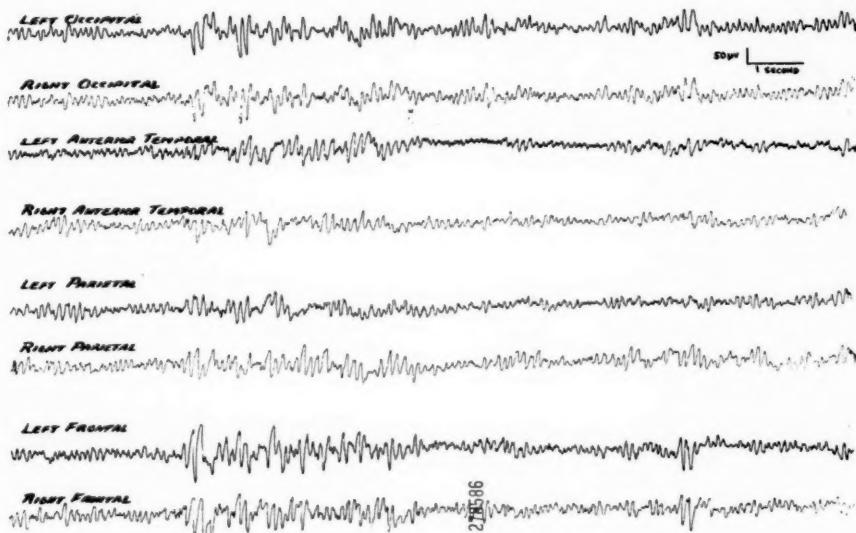


Fig. 3B. High voltage (150 microvolts) 5 to 7 per second peak waves affecting the occipital and frontal areas maximally. Irregular frequency and voltage output in the temporal-parietal areas bisynchronously.

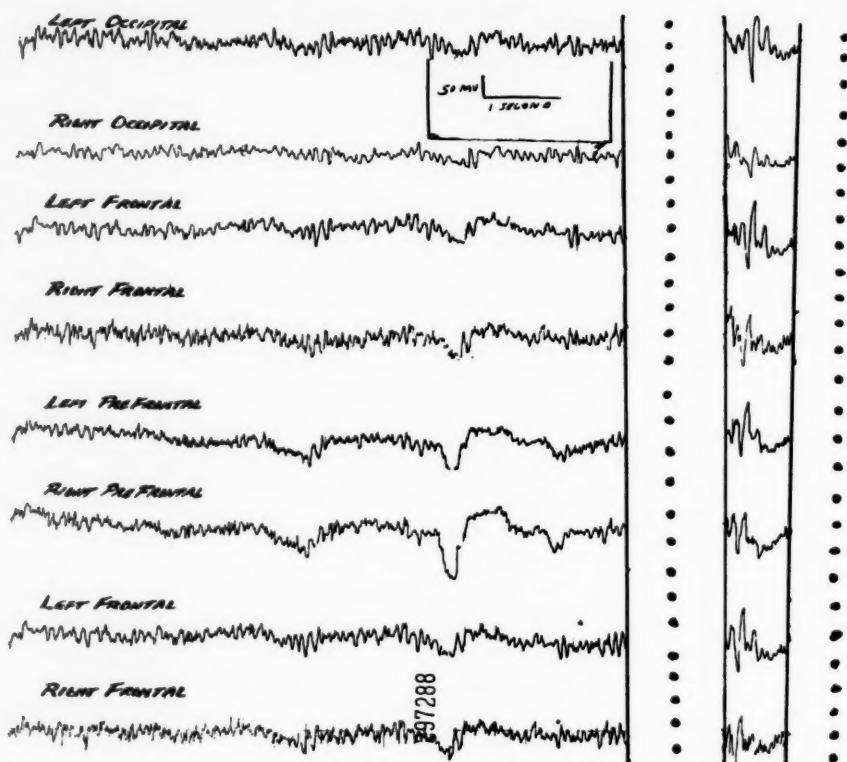


Fig. 3C. Spike paroxysms between dotted lines. Fast activity over both frontal areas.

certainly she would lose her job, the one positive aspect of her everyday life where she earned respect, acceptance, and success. It would have meant facing overwhelming guilt for the violation of her religious and moral training and beyond that for the hurt she would bring upon her parents and siblings. Her unreadiness for the childbirth and the delivery of the child while standing at the foot of the stairs is consistent with the sweeping hysterical denial of the reality of her situation. The process was so complete that her labor pains were not recognized as such until minutes before she gave birth and were quite mild. The girl remained completely unprepared consciously for the birth of the child. The actual expulsion of the baby went almost unnoticed, being incidental at a time of confusion, shock, and panic.

The capacity of neurotic persons of interrupting or disturbing the normal afference of sensory innervation is well known as seen in hysterical anesthesia,⁵ though normal individuals,

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in periods of intense stress, may have a suspension of any or all modalities of sensation. This has been seen in industrial accidents, automobile collisions where injured persons have walked about seemingly unaware of the seriousness of their trauma, and of course, in war injuries. Her cortex was inhibited by her fear and panic from reacting to thalamic discharges resonant of pain from labor, birth travail, and postpartum fatigue. If she suffered a psychotic reaction it was probably acute and brief, assuming for the moment that epilepsy played no part in the events which immediately followed the birth of the child.

Aside from the Rorschach test there is no definite indication that she was actually psychotic, since her ego defenses at no time were shattered to the point of complete emotional flight, either physically by running away or psychically into autism. The action of infanticide, if not the result of automatism during or following an epileptic seizure, seems a primitive reflex reaction which was not premeditated.⁵

Following the birth of the baby J. H. was still incapable of recognizing the full implications of what had happened to her. The lie she made up about "Pat Young" and her placing the baby in a suitcase, intending to take its contents home, showed her alternation between confession and concealment. Even later in the day when she again decided to go home, she brought the suitcase to the snack bar, but then dropping this plan, left the suitcase where it was, and got her books together prepared to go to school. None of this behavior was specifically evasive of discovery by the authorities since her problem was much more serious than flight from arrest. Instead she postponed until the ultimate extended moment the time when her guilt would have to be faced. In her staying in town there was an element of a manifestation of the wish to be apprehended, the action of a criminal who knows she has done wrong, and wishes to be caught and punished. J. H.'s actions were not those of a constitutional psychopathic personality, conniving an alibi or projecting her predicament on others to evade responsibility. Her actions were merely an extension of what she had been doing since she had become pregnant. Her sense of responsibility on a highly ethical level for her misdeeds may have prevented her from becoming psychotic and using this as an excuse for evading punishment. This of course is another way of saying her ego, weakened as it was, still could maintain standards.

In therapy, J. H. had been at first suspicious, hostile, unbelieving, and reluctant to cooperate, and did so only under specific instructions of her attorney who had been represented as a friend. Gradually as she had an opportunity, through narco-catharsis and in conscious discussions with the therapist, to talk out her problems, she became more friendly and less rigid in her affective responses. J. H. presents a picture of a remarkably strong and well-integrated ego structure which has suffered a serious stress to personality and surmounted it. Her experience also illustrates the insulating effectiveness of hysterical mechanisms against descent into psychosis. Once her ego accepted the reality of her actions, her recovery from depression, primitive defense hostility, urges to self-destruction, and flight reactions disappeared.

Anna Freud⁶ suggests that there is in human nature a disposition to repudiate certain instincts, in particular, the sexual instincts. J. H. as a healthy, well-developed young woman was unconsciously aware of her potentials for sexual gratification and anticipated its con-

summation in marriage to D. M. Her frustration by the breaking up of their relationship caused a sudden accession of instinctual energy which at first accentuated her initial primary antagonism to instinctual drives to such a degree that a specific and active defense mechanism was erected against them. This was manifested by dissocial behavior. Her asceticism was eventually sacrificed as her ego strength declined and she made contact with E. R.

In speculating about the nature of forces at work in the formation of hysterical symptoms, Ferenczi states that in the symptomatology of these neuroses, erotic and egoistic impulse come to expression either alternately or most often in compromise-formations. In her case, the compromise-formation was the complete ambivalence manifested by her attitude during her pregnancy, a state of seeming static indifference.

In considering the truth of her amnesia for the crime, even without the background of psychomotor spells, her story is convincing. She cannot recall exactly when the amnesia began or when it ended. The malingerer or hysterical amnestic patient often insists on a specific breaking off point when "everything went blank" and then recalls exactly when he awoke.⁶⁻⁸ J. H. made no attempt to escape after the act was committed and behaved as though she were entirely ignorant that it had occurred. She went to bed. In malingered amnesia there is frequently a flood of recollection of detail. This did not occur to her. It is doubtful that she was being meretricious, cleverly evasive, self-serving or guilty of casuistry when she told the chief of police that she wanted very much to tell him exactly how she had put the plastic belt about the baby's neck but could not say she had done so since this would be a lie.

The finding of confirmatory evidence for her low seizure threshold was important in psychotherapy, since it enabled the therapist to explain to the patient that although her act may have contributed to the death of the infant it was not an act of volitional murder.

B. Physiologic Mechanisms

In commenting about the electroencephalogram, in states of automatism, Jeffery⁸ quotes MacLean and Arellano⁹ who found in 10 out of 12 subjects that spiky activity was present and could be localized to the temporal and basal regions. Penfield suggests that in some cases a patient during automatism may pursue a previously projected line of action but does so now with a limited understanding, perhaps in defiance of all commands to the contrary. Penfield and Jasper consider automatism as a primary bilaterally synchronous or centrencephalic disorder.⁴ They show temporal theta activity in the 4 to 7 per second range. The authors state:

The majority of patients with primary bilaterally synchronous electroencephalographic disorders have a form of petit mal or myoclonic seizures or automatisms with psychical disturbances most often combined with grand mal attacks. Some are found with petit mal automatisms, temporal automatisms or grand mal attacks.

J. H.'s tests showed temporal-frontal theta activity usually bilaterally synchronous in character.

Specific focal discharges in the patient's electroencephalogram do not appear. It would seem that her spells were more likely centrencephalic than that they originated from an irri-

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tated area of the cortex. It is of little practical importance in this situation to speculate whether her amnesia occurred as a part of ictal phenomenon (since stereotyped behavior may be an ictal phenomenon at least in some cases) or whether it occurred during postictal confusional automatism.

J. H. may have inhibited the desire to destroy the child, while conscious, but may have followed this idea while in a state of unconsciousness. The act of putting the belt around the neck of the child probably occurred when she went upstairs after talking with the landlady and her daughter, since her recollection for this period is inexact and inconsistent. J. H. believed the child to have died at birth. This is a minute point, but does suggest she may have planned to take the child to her parents' home believing it was dead while she was conscious, but acted out the infanticide while in a state of epileptic automatism when she could not differentiate actions which were symbolic of her fear, from those which were essentially self-serving.

Hopwood¹⁰ in discussing his experience at Broadmoor, State Criminal Lunatic Asylum in Britain, found 6 cases of epilepsy, of 388 admissions, from 1900 to 1924. All had been charged with infanticide; 3 of the crimes were considered the result of epileptic automatism. In each case the history of epilepsy was authentic and attacks continued after the patient was taken to the asylum. In each case the murder was considered a continuation in an altered form of the work the patient was engaged in at the time, carrying on her tasks as if nothing unusual had happened, and showing total amnesia to the crime. In one case the mother placed the baby on the fire and the kettle in the cradle. In another the mother strangled the baby with a piece of chiffon which she was wearing around her own neck.

Doctors F. A. and E. M. Gibbs, quoted by Guttmacher¹¹ reporting abnormal electroencephalograms taken during sleep, describe 4 of 300 criminals who committed murder during an attack of rage. Joseph Wilder reported cases of spontaneous hypoglycemia in which individuals, without known epilepsy, had spells of automatic activity, much of it aggressive, of which they later had no recollection.

Manfred Jeffery states that in epilepsy, organized automatism occurs either as an expression of the epileptic discharge, in psychomotor attacks, or psychic equivalents or may follow the epileptic discharge as a release phenomenon. He suggests that a paralysis of neurone function at the highest level may occur.

Gowers,¹² in 1881, differentiated between the automatic and hysteroid phenomena which follow epileptic fits of moderate or minor nature. He states:

Whether this mental automatism may replace or represent an epileptic seizure or whether it is always a post-epileptic phenomenon, is a question still undecided.

It is indeed not often easy to convince observers that these actions (automatisms) are not deliberately volitional and intentional so apparently conscious are the patients, but consciousness is in an abnormal state for the memory contains no recollection of these actions.

He wrote of actions which are simple and natural but rendered equivocal by surrounding circumstances which, because of the spell, are not appreciated by the patient. He quoted Rousseau relating the case of an architect, who when seized on the scaffold, would run quickly from plank to plank for a few seconds shouting his own name. He never fell. After

a fit another patient immediately threw her baby downstairs, another hit a friend who was with him, apparently mistaking him for someone else. Still another, a girl of 20, followed each slight seizure by a paroxysm of kissing.

If J. H. were ever to have had a clinical epileptic seizure, the evening of September 18 provided a plethora of emotional and psychologic factors which could have excited a spell. She had not eaten well all day and was probably in a state of hypoglycemia. She had hyper-ventilated, there was extreme fatigue, shock, emotional overexcitement, and hemoglobinemia exaggerated by blood loss following the birth of the baby. Her history of epileptic equivalents, the electroencephalogram results, and the resistance encountered in trying to break through her amnesia with narcoanalysis all make the conclusion of epileptic automatism difficult to evade.

C. Forensic Considerations

J. H. was fortunate in obtaining the services of an excellent attorney who was sensitive not only of legal and medical problems but her psychologic needs as well. He was farsighted enough to consider her future and in a letter to the psychiatrist stated, "I do believe that if any therapy is needed or if anything could presently be done to benefit her future mental condition in view of the possible impact which this tragedy may have upon her, that action along those lines should be taken." He methodically collected social history, statements from persons who had known her, interviewed members of her family and friends, obtained background and previous medical history, and showed keen appreciation for the nuances of legal conventions, particularly insofar as they were affected by the psychiatric evidence. brought forth.

J. H. was held for murder; this was reduced to a charge of manslaughter after the grand jury met in December. Finally, on the basis of the reports to the judge she was put on probation for five years.

The first legal problem which appears in any crime where sanity of the defendant is questioned is the determination of responsibility according to the McNaughten rule. "The defendant must show that he was laboring under such a defect of reason from disease of the mind so as not to know the nature and quality of the act, or if he did know it, that he did not know he was doing what was wrong."¹³

This is the basis for determination of criminal responsibility in every state in the United States and in the Federal courts. Davidson states in his opinion about hysterical fugues that the patient's responsibility is evaluated within the framework of the fugue. The fact that he had no recollection of the crime supposedly has no bearing on his responsibility if within the fugue period he acted *as if he knew what he was doing and as if he knew he was doing something wrong*.

Speaking of epilepsy Davidson states, "Epilepsy cannot by itself exculpate an offender. If the crime is committed during a psychomotor equivalent period or during an epileptic fugue the patient's accountability is measured by determining whether he acted as if he knew whether he did something wrong." Davidson frankly and expertly speaks from the point of view of the courts and baldly states the law does not make allowance for the fact

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that a patient can appear to perform an act which is self-serving (such as getting on a bus, or into an automobile and driving away from a crime, or throwing away a murder weapon), and yet be dominated by an impulse which is irresistible to him and not within his deliberate control. Since many automatisms are apparently merely unconscious reaction formations, it is probably unjust to suppose that merely because a given act performed during a state of fugue or automatism is *self-serving*, this is absolute evidence of its being *volitional*. There is no more evidence to consider that such an act is volitional than to assume that damage done by a patient when in a state of delirium or convulsion or postconvulsive confusion is willful.

With a wider understanding of temporal lobe connections with the rest of the brain and further exploration of phenomena related to consciousness, it is increasingly apparent that revision of our attitude concerning the degree of responsibility which can be fairly placed on individuals who commit crimes during cloudy states is in order. It seems curious that the burden of proof is on the defense to establish innocence by reason of psychic or physiologic impairment of reasoning and awareness. This seems a contradiction of the tradition of law which supposedly asserts that a defendant is innocent until he is proven guilty. Consistently, this principle would be respected only when the *prosecution* proved that the alleged criminal was fully aware of the quality and the nature of his act within the McNaghten formula. In present day practice *this is assumed* and the defendant must challenge the preconception.

The possibility that wider understanding of automatic actions and electroencephalography may lead to misuse of these concepts in the courts should not deter competent and unbiased experts from bringing their convictions before courts and juries. Beyond that to join with representatives of the law to suggest pertinent legislative changes would seem a prime responsibility, and the proper business for the medical-legal committees of medical societies. It is more important and consistent with the law in a democratic state to exculpate the innocent and attenuate the guilt of the partially responsible than with legal prejudice made up of inexact information, rejection of medical and scientific progress, and semantic absurdity, to trap innocent and guilty together.

In the course of an experimental investigation into the validity of confessions obtained under sodium amytal narcosis by Gerson and Victoroff¹⁴ at Fort Dix, N.J., 17 soldiers proved guilty of antisocial behavior, who refused to acknowledge their complicity in crime, were exposed to a special narcoanalytic technique. Prolonged deep narcosis exceeding the limits usually employed with narcoanalysis and persistence in questioning evoked confession in every instance, even though the validity of the confessed material was seriously limited by fantasies and their confessions were repudiated by 8 of the 17 after they had awakened.

Considering this research and the wealth of unconscious and usually inaccessible information obtained from J. H., it was unexpected that she should be totally unable to recall the detail and sequence of events concerning the strangulation of the baby.

Most writers, discussing the value of narcoanalysis in court, stress that testimony concerning dates and specific places given by patients under narcosis is untrustworthy and often contradictory because of distortion in the patient's time sense. Names and events are of

questionable veracity, and contradictory statements are often made without the patient actually trying to conceal the truth but succeeding in this by confusion between what has actually happened and what he thinks or fears may have happened. Often the production of fantasies and delusions makes it mandatory to check the facts by reference to objective sources for information.

In Davidson's¹³ opinion it is interesting to know what the defendant will say under barbiturate narcosis, but if such statements are inadmissible as evidence, he thinks the procedure usually contributes nothing to the determination of the defendant's guilt or responsibility.

Considering the rather important questions relative to J. H.'s claimed amnesia, reaction formations she had manifested, her fantasy life, and her basic personality structure the procedure in this instance was certainly justified and the effort rewarding.

The longitudinal study of her case permits the neuropsychiatrist to reasonably say that J. H. suffered from at least one psychomotor seizure which prevented her from knowing the nature of her actions and probably produced a complete amnesia for the strangulation of the child. Redlich¹⁵ tried to obtain confessions under barbiturate narcosis from persons who were of normal and well integrated personality and was unable to do so. This raises the question of whether J. H. could have resisted an inquisition under narcosis, if she did not have a psychomotor seizure. The answer is not determinable at this time.

If the question of whether J. H. was psychotic is tested by the McNaghten rule, she should have been declared as "laboring under a defect of reason from a disease of the mind (epilepsy) so as not to know the nature and quality of the act."

The additional legal question concerning the association with epilepsy and insanity has yet to be resolved. In this situation there is no room for a plea of "Guilty by Reason of Epilepsy" as differentiated from "Guilty by Reason of Insanity." There should be a differentiation between actions committed by a person who is unaware of the nature and quality of his act because of psychosis, and one who suffers temporary suspension of the normal process of awareness. This distinction has been taken up in cases of alcoholics who commit crimes. It is admitted that the alcoholic may be unaware of his crime, but inasmuch as he is supposedly aware of what he may do if he becomes intoxicated, he is usually held accountable for his actions while intoxicated. Though this would not usually apply to an epileptic, it might if a controlled patient on anticonvulsant medication should deliberately forego medicine to incite a seizure.

Had it not been for a farsighted attorney and a sympathetic judge, J. H. might in an extreme instance have been declared guilty by reason of insanity (epilepsy) and literally institutionalized "until her disease shall have been declared cured." Considering the dubiousness with which modern neurologists speak of the cure of epilepsy, such a prospect would possibly have meant incarceration for an indefinite period of time.

D. Community Reaction to J. H.'s Crime: Sociologic Implications of Infanticide

Society seems to manifest a not unremarkable regard for the travail of the mother who kills her child. In the realm of James I in England, an act of Parliament was passed to deal with the practice of killing illegitimate children. Techniques of abortion were exceedingly

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dangerous at that time to the life of the mother and it was easier to kill the child. The law stated, "It is murder unless she, (the mother) could prove by one witness at least it was born dead."¹⁶ This law was considered so unfair and severe that in practice the judges, juries, and prosecution entered into a conspiracy to defeat its harshness. The act was repealed in 1803 when an amendment was made whereby, "It shall be lawful for the court before which such prisoners have been tried to judge that the prisoners shall be committed to the common gaol, or a house of correction for any time not exceeding two years."

The two year penalty again recognized the special difficulties of the woman with an illegitimate child who kills it, and indicates a reluctance to impose on her the death sentence which would necessarily follow the accusation of murder. William Hunter, the famous physician and pathologist, in July 1789, stated with some foresight and appreciation:

"What is commonly called a murder of a bastard child by a mother is a very different crime if all the circumstances were known. In most cases the mother has an inconquerable sense of shame and pants for the preservation of her character. . . . In proportion as she loses hope in either having been mistaken as regards her pregnancy or of being relieved of her terrors by a fortunate miscarriage, she every day sees her danger greater and nearer and her mind more overwhelmed with terror and despair. . . . They are meditating different schemes for concealing the birth of the child. . . . They often are taken in labor sooner than they expected. . . . They are delivered by themselves just where they happen to be. . . . They faint away, and on recovering consciousness, find the child apparently lifeless. Under the circumstances they fight every appearance of what has happened and do their best to conceal the birth."

In 1815 when an inquest returned a verdict of suicide, the body of the deceased was subjected to the odium of burial at a crossroad with a stake driven through the body and forfeiture of goods. The *Morning Chronicle* of January 24, 1815, noted an inquest on the body of Sarah Sylvester who, "ended her existence by cutting her throat with a razor in the hayloft over the stable after having delivered herself of a male child, whose body was found lying near her with a silk handkerchief tied around its neck. . . ."

It was a curious and generous decision of the inquest that they regarded her act as denoting no particular sign of insanity, and stated she had had a razor in her possession, "as it was necessary for the woman to have a sharp instrument for the purpose of delivery." They supposed she might have had it without any idea of committing suicide, and that her pains, from want of proper assistance at the time, might have brought on "momentary derangement." The handkerchief tied about the child's neck was assumed "for purposes of delivering herself," and in the absence of marks of violence on the body, the deceased was not held guilty of murder.

The Infanticide Act of 1922, in Britain, was a direct consequence of the impression that a woman who killed a newly born child would be found guilty of the offense and sentenced to death, provided she was not found to be insane. Many judges, and the public also, felt it was undesirable to pass the death sentence on such a person. Everybody knew that within a few days the prisoner would be reprieved and the sentence commuted to one of penal servitude for life.^{10, 17}

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Although sympathy exists for the woman involved in infanticide, it is apparently refused the man who kills the infant. In the case of Desatnick, a 23 year old man killed his illegitimate child by throwing the baby into a lake. It was not possible to prove he was a principal in the killing of his baby, so the jury brought in a verdict of "Not Guilty" in the first indictment, but charged him with being a principal on the second indictment of, "Procuring murder in the first degree as an accessory before the fact." This particular verdict of "Not Guilty" as principal, but "Guilty as Accessory before the Fact" caused considerable surprise and reached back over a hundred years to a precedent. He was electrocuted for his crime.¹⁸

From the first intimations of J.H.'s trouble, considerable community sympathy was engendered. The bail of \$20,000 was raised among neighbors. E.R., her seducer, was comparatively harshly dealt with, both in the court, which fined him \$100 and imprisoned him for three months, and also in the pages of the newspaper, whose editorials and letters to the editor, carried expressions of concern for J.H. and condemnation for E.R. Her employer staunchly supported her and praised her honesty. He held her job for her until the trial was over.

Unsolicited letters were written by the minister of the church. He wrote:

I sincerely hope that those in authority will discover the wisdom of Christian charity, and that the resurrection of life itself might not have to wait until the end of physical existence, but that through the power vested in the legal authority that you represent, might resurrect hopes so that for her, it may be the land of beginning again . . .

A petition signed by 35 members of the church said:

She was president of our youth organization . . . was looked upon as a leader. She was loved and respected by all of us and was a visitor in our homes where she mingled with our young people.

There was never any reason to question her honesty, sincerity, or integrity. Basically, in our estimation she is a good girl. This is the time when she needs our help and our sympathy . . . our prayer is that the court may be lenient with her . . . to err is human, but to forgive divine.

The principal of the high school praised her as being a "conscientious and cooperative student who did well in school." Actually, she was only an average student. He goes on:

She was a normal active girl whose conduct was very good . . . it is our sincere belief that she could not reasonably be held accountable for her actions immediately following the ordeal she must have undergone.

A neighbor wrote:

Whatever the circumstances involved, she certainly met the lowest type of man, and in my opinion he should have received the maximum sentence. It is hardly the time to show much consideration for his family, when he himself has shown no decent regard for them. It is indeed a tragic affair but I trust everything possible will be done for her, who has now suffered far beyond her years and acted in panic.

A woman for whom she had done baby-sitting several years before, said:

I regret she has had such a misfortune . . . she assisted in my home and caring for my two little boys while she was attending grade school. She was well behaved, neat and clean, and well mannered, as well as being trustworthy, honest, and reliable.

A sermon by a local pastor, who criticized J.H., was followed by vehement renunciation by his parishioners, one of whom wrote:

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I lost my last vestige of faith in the pastor of the church, when he of all people, knowing she was already down, delivered her a kick from the pulpit. True she did wrong, but does she have to be crucified on top of it?

Mrs. E. R. complained:

I wish some one would explain to me why he, (referring to E. R.) is the only one that is being punished in this way. J. H. has named my husband as the father of her murdered child, but why have not the other named men that had relations with this girl, been punished also? Can a girl like that prove just which man was the father of that child? I say no, there were too many men involved with this girl at the same time.

Following was an editor's note. "Mr. E. R. at his arraignment claimed there were others, but officials say J. H. has never named any other man (in talking to them)."

Apparently there is an appreciation for the almost atavistic element that is certainly present in some infanticides which are likened to the destruction of their young by animals when they are threatened, under attack, or in a state of anxiety. Beyond that is the appreciation that a mother who destroys her own child constructs enough guilt in this act to punish her sufficiently for her crime. Perhaps in our society there is some reluctance to believe it possible for a woman to methodically plan to dispose of her infant. Such a concept would weaken or negate the socially useful doctrine that mother love is engendered for their children in the event of giving birth, a misleading dogma that probably causes as much harm as it does good.

Perhaps the most substantial proof of community acceptance of J. H. is the fact that she was forgiven, permitted to return to her job, and social adjustment made possible for her.

A report was solicited by the court concerning the history, the findings on examination, results of narcoanalysis, and material by electroencephalography. This report concluded with an opinion that J. H. had suffered amnesia, probably due to psychomotor epilepsy, at the time her baby was killed. The examiner recommended that J. H. be placed on probation and expressed the sentiment, "Inasmuch as this is possible to say of anyone, I believe she will eventually prove herself to be a creditable member of the community."

The decision of whether to enter a plea of "Not Guilty," "Not Guilty by Reason of Insanity" or "Guilty" was dubiously regarded by the attorney. The plea of "Not Guilty" would have challenged the court to prove murder had been done, that the child had actually lived, and then died of strangulation. The pathologist's report did assert strangulation was the major cause of death. This could only have led to a long court struggle involving J. H. in a procedure which the psychiatrist felt would be potentially dangerous to her. Moreover, it would give the impression, not desired and not true, that J. H. was defiant and did not admit her guilt.

The second plea, "Not Guilty by Reason of Insanity (Epilepsy)" would have meant that if the epilepsy was alleged to still exist, J. H. might be considered ineligible to go to trial until the condition had been cured, and might be institutionalized at the State Hospital for the Criminally Insane until such time as cure was determined.

J. H. herself decided on the plea of "Guilty" and a private court hearing was held at the end of March, 1953. J. H. was sternly admonished by the judge who told her she must accept mature values in a mature world and shoulder her responsibilities. However, he had considered her obvious remorse, her desire for restitution implied in her plea of guilty, the

psychiatric report, and the social history which gave support to her character references. The judge put J. H. on probation for a period of five years.

J. H. declined to continue therapy. In her last visit before the trial she manifested appropriate affect. She was sober, her insight concerning the issues of the immediate problem was good; she was somewhat skeptical that her minor memory lapses constituted an illness that required care, but promised to continue the dilantin. She said she could not go back to the department store and had the idea she wanted to leave this town forever.

In preparation of this paper the attorney was recently queried. He said he hadn't seen her, but understood she did go back to work at the department store. She was making small payments on her accounts at the hospital, to the physicians, and to himself. She had declined the help of the family and insisted on paying the debts herself. The attorney said further she was soon to be married.

A recent letter from J. H. follows:

Dear Doctor:

I am very sorry, I will not be able to keep the appointment you have made for me. We are quite busy at work and I do not like to ask for time off. I am working at the department store, and I really am getting along just fine. I haven't had any dizzy spells; I wear my glasses at work. I am engaged and getting married next month. J. has to go overseas, and we want to get married before he goes. I hope this letter tells you everything you want to know. I am very happy.

Sincerely yours,

IV. DIFFERENTIAL DIAGNOSIS AND CONCLUSION*

Any attempt to state a neuropsychiatric diagnosis of the patient's condition will be misleading if her past history, the period of pregnancy, the time when she killed her child, the reaction formations immediately following the crime, and later her behavioral patterns in recovery are lumped together.

Certain longitudinal diagnoses may be asserted. First, from the patient's history both remote and recent, plus her electroencephalographic records, there is little doubt of the organic diagnosis: *chronic brain syndrome associated with convulsive disorder, centrencephalic epilepsy manifested by psychomotor, and petit mal automatism*. Consideration of her basic personality for predisposition would warrant the diagnosis: *compulsive personality, mild*.

During J. H.'s pregnancy, *anxiety reaction with dissociative features* would have to be added. On the night when the baby was born, *gross stress reaction* was evident and from the evidence of the psychologic tests, *psychotic depressive reaction manifested by infanticide and primitive flight reaction* might tentatively be postulated. However, the author prefers to postulate the diagnoses which apply to her on the night the baby was killed and the next day in order of their importance as:

* This section has been elaborated for publication. It was not read when the paper was presented before the Cleveland Society of Neurology and Psychiatry, February 17, 1954. This note will explain seeming discrepancies in the discussion from the floor which is transcribed in the next concluding section (V).

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- (1) *Primipara. Spontaneous delivery of viable full term male infant with rupture of the umbilical cord.*
- (2) *Gross stress reaction induced by the birth of an illegitimate infant, fear of the consequences of discovery, pain, blood loss and hypoglycemia, manifested by panic, dissociative behavioral disorder, fugue, and infanticide.*
- (3) *Acute brain syndrome, manifested by convulsive disorder, centrencephalic epilepsy, psychomotor automatisms.*

A case of infanticide committed by an 18 year old unmarried girl has been presented. The patient claimed complete amnesia for the act. In the course of deep narcoanalysis, data were uncovered which led to the discovery that the patient had previously suffered epileptic equivalents.

The hypothesis that a low convulsive threshold existed was strengthened by the findings on electroencephalography of bisynchronous bilateral dysrhythmia consistent with centrencephalic epilepsy and psychomotor automatism.

Comments concerning psychodynamic and physiologic mechanisms and legal and sociologic implications have been offered.

V. DISCUSSION

Dr. Daniel Badal: I have two observations. The first is in relation to the electroencephalograms. They are not specifically diagnostic nor seemingly typical of temporal lobe epilepsy, but are spiky and generally dysrhythmic. Perhaps if more of the records were shown, it might look more typical.

Next, I am surprised not to have heard the old-fashioned word "dissociation." Wouldn't you consider her behavior, at the time she killed the baby readily described by the term "hysterical dissociation?" Then also, there's the question of whether she suffered from hysterical epilepsy in which the spells of dissociation occur in individuals who are hysterical personalities.

Dr. Louis Pillersdorf: My question is related to the second part of Dr. Badal's. If the electroencephalogram had been negative, what would you have claimed in defense of the patient, had it come to trial?

Dr. Gerhard Hoffman: I can relate the history of a man who wanders off and has a psychomotor spell during which time he steals things from cars. As far as anyone can tell, he is in control of himself, but he denies this and says he has complete amnesia for his acts. What can we say for such a man in his defense?

Dr. Richard Stout: I want to compliment Dr. Victoroff on his review and state that I agree with it substantially. However, I have wondered for some time what is the normal electroencephalogram of mothers during the period of labor and afterward?

* * *

Dr. Victoroff: In respect to the electroencephalographic evidence for psychomotor epilepsy, the latest work of Drs. Penfield and Jasper (*Epilepsy and the Functional Anatomy of the Human Brain*) indicates that automatisms may be present without the specific 3 per second peak waves occurring bilaterally over the temporal areas or the mixture of 6 and 14 per second activity (as described by Dr. F. A. Gibbs). Theta activity in the 4 to 7 per second

range, distributed in the frontal areas, the temporal areas, the temporal-parietal regions, or more diffusely, occurring as bilateral bisynchronous discharges are also associated with automatism. These may be in the category of centrencephalic seizure discharges. Beyond the theta rhythms, which are profusely illustrated in these electroencephalograms, there are occasional petit mal variants, some of which I have shown. I have no hesitation at considering this record to be a paroxysmal one and consistent with a low convulsive threshold.

Because of the seriousness of the situation, I was glad to get the independent results of Dr. André Weil, whose reputation as an electroencephalographer is among the best. His electroencephalograph and a later test I repeated all agree. These records are bisynchronously dysrhythmic and affect, for the most part, the fronto-temporal areas.

(Bilateral theta rhythms are not specific epileptic patterns, since they occur in many patients without seizures. They seem to be common in aggressive psychopaths and in children with severe behavior difficulties, particularly in those with compulsive outbursts of misbehavior, often violent, and not related to adequate precipitating factors in the environment. Although such children are not necessarily considered epileptic unless they have convulsive seizures, they might be described as epileptoid. . . .)

Bilaterally synchronous theta rhythms seem to involve a centrencephalic projection system different from that of the petit mal wave and spike, though there seems to be some overlapping in their cortical areas of projection. The bitemporal predominance is most common though in some cases the highest voltage appears in the electroencephalograph over the frontal regions . . . it may be the same system which is activated secondarily by epileptogenic lesions in the cortex of the temporal lobe or subjacent rhinencephalic structures. (Penfield and Jasper, *Epilepsy and the Functional Anatomy of the Human Brain*, p. 635-636.)

As to the use of the term hystero-epilepsy, I cannot say that the patient's conduct was hysterical prior to her pregnancy.

* * *

Dr. Badal: But she is a *classic* hysterical personality!

Dr. Victoroff: I agree that J. H. manifested, in her past history, many stigmata of hysterical personality. However, at no time to my knowledge, did she actually use temper tantrums or conversion reactions for secondary gain in her previous history. As I described, she was known as a stable and secure girl who got along well with her family and friends and was certainly not disposed to odd and errant behavior. In hystero-epilepsy, one has to assert that the spell itself originates as an expression of some denial of instinctual pressure or as a defense against some fantasized threat. The episodes described by J. H. do not, in my estimation, seem to qualify as having been hysterical, though I admit my knowledge of her psychic state during the times of these earlier manifestations is rather sketchy. In further commenting on the idea of hystero-epilepsy, it is my impression that as we get to know more about the physiology of consciousness, we shall be able to differentiate more sharply between hysteria and epilepsy and will have no need for the archaic term hystero-epilepsy.

In answer to Dr. Hoffman's question, it is my impression that there is and will continue to be a deep reluctance to permit persons to evade responsibility for their actions if they are seemingly criminal. The patient who, during a psychomotor spell, acts out a hidden or

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frustrated desire or who performs a routine act in a setting which makes it an unwitting crime, may face just as punitive an action of the community against him as if he did this act maliciously. However, I do think differentiation should be made between the person who commits actions over which he has no control (which are incidentally crimes) from the person who commits crimes in full knowledge that his act is wrong.

I must admit that I am intrigued by Dr. Stout's question but do not know of any work in electroencephalography, which I can quote, having to do with women in delivery. It certainly is a wide open field for research.

SUMMARY

Electroencephalograph tracings indicate bisynchronous bilateral paroxysmal activity affecting the frontal, temporal, and to a lesser extent, parietal areas. Spike and peak wave complexes appear suggestive of petit mal variants. Sensitivity to hyperventilation, moderately severe.

RESUMEN

El trazado electroencefalográfico indica una actividad paroxísmica bilateral bisincrónica que afecta las zonas frontal y temporal y, en grado menor, la parietal. El complejo de ondas de pico y espigas parece sugerir variantes del "petit mal." La hipersensibilidad a la hiper-ventilación fue moderadamente grave.

RESUME

Les tracés de l'électroencéphalogramme indiquent une activité paroxysmale bilatérale et bisynchronisée affectant les régions frontales, temporales et à un moindre degré les régions pariétales. Des complexes comprenant des ondes "spike" et maxima suggèrent des variations du petit mal. La sensibilité à l'hyperventilation était modérément sévère.

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FOREWORD

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In fields which are developing as rapidly as are psychiatry and neurology, it is obviously impossible to abstract *all* the articles published—nor would that be desirable, since some of them are of very limited interest or ephemeral in character. The Editorial Board endeavors to select those which appear to make a substantial contribution to psychiatric and neurologic knowledge and which promise to be of some general interest to the readers of the REVIEW. Some articles, highly specialized in character, or concerning a subject already dealt with in an abstract, may be referred to by title only at the end of the respective sections.

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Spirals Unfolding

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A red spiral, a Hindu friend informs me, is painted on Hindu bedroom doors when a birth is about to take place, while the birth amulets include whorled shells which are placed in and outside the bedroom, to assist birth. It is believed that the symbol and amulets will cause the child to perform the necessary spiral movements before birth. According to celtic belief, it should turn sunwise, that is to the right, like the Season's controlling constellation, the Great Bear. (Donald A. Mackenzie: *The Migration of Symbols and their Relations to Beliefs and Customs*, p. 111.)

The connection between birth and spirals as submitted by Donald A. Mackenzie presents the students of symbolism with data of considerable interest. The spiral emerges from Mackenzie's statement as a symbol of the unfolding of human life. The linguistic coincidence between the verb to bear (a child) and the bear (the animal) is also worthy of some attention. Issuing from the cave where it hibernates, the bear's wintering closely parallels the uterine life and birth of the child into the spring of life. The cosmic jump from the bear to the Great Bear (Ursa Major, the Dipper), "bears out" this symbolic interpretation. This is no play on semantic oddities. It was believed by the ancients that the constellation of the Great Bear controlled the revolving seasons of the Earth, that it was a magic generator and the source of all energy that permeated the world. Hence, in the sign of the spiral, we see human life projected into relationship with the galactic universes, the spiral nebulae in the depth of infinite space.

No symbol could have a vaster and more awe-inspiring setting than this. It should, therefore, be a matter of justified curiosity to investigate contemporary dream life in the West in order to find out whether, through the unconscious of the race, any awareness of such relationship to the Cosmos emerges from the psyche of modern man.

In order to grapple with this task, we should first clear the ground by stating that reaching out into the Cosmos to unravel the mystery of the spiral is by no means a compelling

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necessity. We can always fall back on a practical, nonsymbolic evaluation of the spiral in everyday life. The thread of a screw, a corkscrew, the helix in our mattress, the spring in the kitchen scale, or the hairspring in a watch are just a few of the innumerable mechanical appliances that put the spiral to work for us. A roll of paper, the shape of a jelly roll, the spinning of a top in the nursery, the spiral staircase, and the varied decorative motives used in art and architecture open up limitless applications of the principles of the spiral. We find it in manifestations of nature: in smoke rings; in whirlpools, whirlwinds, and cyclones; in the whorls of shells; and in the coiling of snakes. It is a pattern imbedded in the horns of some animals and in the "mortal coil" of the human organism: in fingerprints, in the curls of hair, in the navel, and in the ear. A length of rope, a fire hose, a loose piece of string, or the spaghetti heaped upon the dinner plate may assume the shape of a spiral in an arbitrary fashion. It is a popular superstition that girls may find out the name of their intended by throwing a piece of fruit peel over their shoulder and observing the letter it forms. This letter, of course, is mostly an S, a near approximation to the spiral. For the unconscious, any fancied resemblance is sufficient for an identification.* It is not the influence of superstition or myth that predisposes us to live in fantasy but rather the fantasy life of the race is responsible for the existence of folklore. The whirlwind may carry supernatural beings in spite of all the contrariness of science because "The Lord answered Job out of the whirlwind" (Job, XXXVIII, 1 and XL, 6) and because of Jeremiah's vision: "Behold, a whirlwind of the Lord is gone forth in fury, even a grievous whirlwind; it shall fall grievously upon the head of the wicked." (Jeremiah, XXIII, 19.)

A dynamic picture means far more for the unconscious than a static representation. Here is a comparatively simple illustration of the use of the spiral from the dream life of a young girl at the time when she found her romantic salvation through a new boy friend called Larry:

"I was all wound up in a piece of string, the whole body from head down to the feet. Larry took the end of the string and pulled it around the middle and I began going round like a top until I finally became untwisted. I got dizzy and fell down on a bright red couch with a plush seat."

Psychically, young girls remain wrapped up in their mother until a strong desire develops for a new life and for a home of their own with a man of their choice. Here we see an umbilical string unwinding (as if from a mummy—Mummy) to the point of beginning. The near-faint is suggestive of another state of life in which her body was well-cushioned by the red comfort of the uterus. Hence, the spiralling function manifesting itself in this dream may well be considered the unfolding sign of a new life. No terror is shown, no sign of a catastrophic feeling is visible (which is the chief characteristic of birth dreams), so the dream is only allegorical of birth and not intent on re-enacting the emotions connected with it. The nightmare which follows illustrates the latter situation:

* Goethe's *Spiraltendenz* "was a triumph of inaccurate observations transformed into a great truth of the romantic school. He sought to show that the upward growth in the stems of plants was due to a natural, inscrutable life force, and was male, while the spiral tendency of climbing plants was female. We remember that women were much identified with the clinging vine in Goethe's time." (Stuart Chase: *The Tyranny of Words*, p. 217.)

"Huge rats, a yard and a half in size, were after me. I found myself on a spiral staircase. I could float downwards to escape the rats and could stop at any floor but I could not float upwards.

"This was a recurrent dream. I never dared to speak about it to Father. When I remembered it I went to my room and said that I had a toothache."

Rats of the size described are monsters. Hence, the dreamer speaks of a monstrous fear, of a deadly peril to his body in an underground place or sewer, which is the habitat of rats. Floating is a typical functional affect of intra-uterine life. Birth is a downward movement and the dreamer can only float downward on the spiral staircase of the uterus. In doing so, he has to perform spiralling movements himself. The stops, suggestive of landings, apparently stand for pauses in maternal labor in which he only cooperates under pressure (the rats are behind him).

Recurrent dreams are usually extremely traumatic. A growing child is incapable of understanding the trauma of his birth without adult enlightenment. The reticence to communicate the nightmare to father is a hint at the total lack of comprehension. Yet, the alibi of the toothache is also a hint. A tooth is imbedded in the gum as a child is imbedded in the maternal body. The separation by extraction is exceedingly painful. In view of which, the meaning of the toothache is: I am in pain but I dare not mention it because if I do, something worse may happen.

That, on a more remote level, fathers may have an actual part in this horror is revealed, together with the stuff of which the rat is made, in the next dream that comes from a different patient and shows less anxiety but a stronger tendency to sexualization:

"I am in New Orleans with a few friends, none very close, in the outskirts, and we all want to go to the main part of the town, the French quarter and have some fun with women. Either we have no money or we do not know how to get there. The landlord suggests that we enter a contraption instead, which will afford enjoyment. It has an opening like the slit of a mail box at the post office. Your hands slide inside first, and the contraption rolls you up into the shape of a pipe or fire hose. It has the feeling of a roll of toilet paper from the inside. There was danger of an attack by someone called Mickey Mouse, but it passed and nothing happened. We were disappointed."

The slit of a mail (male) box is a symbolic entrance into a woman's body. Ordinarily, the toilet paper would also evoke an entrance, the anal one which does not make much difference as in uterine dreams such entrances interchange. A toilet paper roll is a spiral and the chances are that the patient's dream suggests fetal evolution. The center beyond his reach to which he can only get through a strange contraption by the help of the Lord (landlord) is the maternal womb. Instead of lustful satisfaction—a fairly normal postnatal fantasy—he finds himself in danger. Mickey Mouse is human. Moreover, one of the friends whose name he remembered from the dream was called Mike, and when I asked him for associations with Mickey Mouse he answered: rat's eyes; the slit on the penis looks like that. If then Mickey Mouse is a phallus, the danger of attack is a fantasy about intercourse between father and mother during pregnancy. I say *fantasy* advisedly, for a prenatal trauma of this kind would manifest itself in a more violent nightmare. It is the toilet

roll as a spiral and the hint at the phallic nature of the mouse or rat as a symbol of aggression that makes the dream outstanding in interest.

Let us now see another nightmare in which the unfolding symbol of the spiral appears with a twist:

"I was sitting in my mother's room and we were looking through the window which opened on the corridor that ran around the inside of the house. I saw a big cat and rings of smoke coming from its mouth. It was suffering and looked as if it could not breathe. I asked mother for gloves to reach into the cat's mouth and to take out a cigar or cigarette which appeared to cause the choking.

"Then I met Red, and told her about the cat. She asked laughingly whether the smoke came out of the cat's mouth or behind. I teased her how much I missed her. Then we were in a street car. She was sitting, I was standing. There was something yellow.

"A gambling casino was being reorganized. There was also a traveling circus, with music coming from inside. I am outside and look in through the transparent canvas. The conductor is a woman; the music lasts too long and everybody is impatient for the performance to begin."

This dream is full of anal references. The cat, the patient said, could be his father because he always had diarrhea. The patient himself had been suffering from chronic constipation for the past four years, since he had an appendectomy. The cigar or cigarette stuck in the cat's throat thus has a strong fecal suggestion. Transposition from below to above (from the anus to the mouth) is clearly shown by Red's question. Red herself stands for constipation as an example of organ personification. "Red-haired woman sitting in the yellow" was a toilet association from the patient's childhood. Teasing her and missing her stands for an attempt at evacuation without result. "Going to the casino" was another juvenile description of going to the toilet. As to the transparent canvas of the circus: "When I sit on the toilet, I wish it were transparent; I would like to see what is happening below." The circus then is a circle, a symbol for the anal opening (which is a feminine orifice in the male), while "traveling" and the impatience for the performance (together with the flatus-music) stand for the movement that the patient so much desired.

From all this it is clear that reaching into the suffocating cat's mouth is an attempt to release chronic constipation.* The patient wanted to be like his father who could always move. The interpretation of the dream might have stayed at this level if the patient had not suddenly revealed an additional piece of information: that as a child he believed that birth takes place through the anus. It was from a girl that he first learned the truth. This raises the question whether this patient's constipation was a cover symptom for the trauma of birth that his appendectomy had mobilized. The somatic channel was made readily available through his early belief in anal birth. In which case the cat also stands for mother (a biparental symbol) and the cigar for himself as the fecal child. That explains the ease with which he uses Red for a similar representation. The smoke ring, in this light, would not

* See also Nandor Fodor: Motives of Chronic Constipation, in "New Approaches to Dream Interpretation," pp. 134-145.

stand for body gas but for the spiral of unfolding. When he is in his mother's room at the beginning of the dream, he is in the uterus, the window is the door to life and the suffocation of the cat is the suffocation symptom of birth.

In favor of this explanation, which the patient had no difficulty in accepting, stands the additional consideration that the smoke ring as a symbol of flatus would actually indicate a break in constipation and thus contradicts the cigar and the suffocation; further that the fire symbolism hidden behind the cigar, with Red furnishing the glow, is much more descriptive of the tortured, burning hot body of the neonate than of constipation. It is diarrhea that leaves one with burning feelings, not constipation. Further indication that this thought moved on the right track came from the recall of a much earlier dream about an iron ring and a top on board ship. The top, after spinning, was supposed to revolve on the rim of the ring. A man spun it, and the top went around the rim in a perfect circle. When he tried it, the top sprung off. The iron ring is an excellent symbol of the constipated anal orifice but also of the birth orifice that holds the child in a viselike grip. The determining element is again the spiral. The top moves in the orbit of a spiral. Hence, the patient did not fail when the top sprung off. It was the man ahead of him who failed. This man exemplified going around in a vicious circle, whereas the patient changed the circle into a spiral, thereby indicating—at a rather early stage of his analysis—that his constipation was a symptom of the trauma of his birth.

That the circle is not the only geometrical figure that can change over into a spiral, is shown by the dream of another man:

"I was rounding a block in a car. On returning to the spot from where I started, the spot no longer looked the same. The side of the square was now on a higher level. Also, instead of daytime, it was now evening. Then I found that I lost my keys to the locker in the swimming pool."

Elevating one side of the square permits the tracing of a succession of squares on the pattern of a spiral. Progression via an angular spiral is also indicated by the sudden passing of time. Lockers and swimming pools are shaped like cubes, squares or oblongs. No keys means no return. Not being able to have access to his clothes in the locker, the dreamer is in the position of a child emerging naked from the waters of birth. Life on the material plane is about to unfold.

That there is more to know about this unfolding and of the relationship between square and spiral, will appear from the dream of an architect:

"I wanted to go to the bathroom. The toilet bowl was square and it was full of refuse. I flushed it and watched the water swirling the refuse around. Some of the refuse remained and reminded me of the vomitus of my mother in the back room of the synagogue—one of my earliest childhood memories."

This is part of a long and complicated dream in which the spiral appeared twice before: (a) a boy attached springs to his ear and pulled them out in the shape of a helix, and (b) he tried to fix small coils of springs into a gadget but failed to make the gadget work. The swirling waters of the square toilet bowl was the third spiral. Because he immediately associated it with his mother's vomitus in the synagogue (a holy place) and because all

sewers have a strong uterine symbolic value, the refuse that remained in the square tank hints at an undisposed problem. I submitted it as a principle of dream interpretation that there are no half-statements in dreams.* Hence, the nature of the problem must be concealed in the structure of the narrative. It appears to be hidden in the episode concerning the springs attached to his ear. After he released himself, the boy ran away. He attempted to catch him by *circling the block* from the opposite direction. The block is a square (or oblong). Circling the block is equivalent to circling the square. Squaring the circle is an ancient paradox. Could it be that this paradox had an unsuspected psychological meaning and that circling the square is a complementary or subsequent part of the riddle?

The dream of a post office clerk helps us to take the next step in our search: "I enter a sort of town square and see a cannon throwing a projectile high into the air in a parabolic curve. The cannon is, perhaps, better described as a medieval catapult as the projectile is square-shaped and it is composed of metallic wires in a compact mass as if green paint had been poured over it thickly; the composition was not unlike that of shredded wheat. The projectiles fall, with remarkable accuracy, into a bowl-shaped receptacle made of concrete on the further side of the square right into a circus which is performing there. I suppose these spectacular and mysterious projectiles were part of the entertainment."

Cannons do not shoot square projectiles. To make a cannon's mouth square is just as incongruous as was the shape of the toilet bowl in the previous dream. As I mentioned, the dreamer was a post office clerk. Oddly enough in the background of the ear and spring scene of the architect's dream there was a post office that had deep, mysterious arches on its ground floor level. Whether the parabolic curve of the square projectiles has an unconscious equation with an arch or not, the post office is an agency of communication between distant parties or, symbolically, between remote levels of the human mind. If we accept the arch as a substitute for the pelvic arch, its elevation into heaven might be paralleled by the phonetic equivalence between cannon and canon and hint at a spiritual law concerning circles and squares. The town has a square and within that square there is a circus (circle). The square projectiles fall into this circle. In dynamic sequence, we find first the mouth (circle) of the cannon squared, then the town square circled as if the dream mind took pains to drive home a relationship between two geometrical figures, as if it tried to tell us something new about an ancient paradox.

Immediate associations following a dream are considered part of the dream. Hence, the mother of the architect is present in the square toilet dream in an explosive fashion (*vomitus*) that shows a vague agreement with the cannon. In the dream of the post office clerk, the town square is suggestive of mother as towns have a feminine gender and the term "native town" endows them with a maternal significance. When the town square is circled and within that circle there is a bowl to receive falling items shaped like shredded wheat we have a geometrical picture of the nursing mother or the womb as if the whole dynamic operation would serve the purpose of integrating the complex ideas grouped around mother in the unconscious.

* "New Approaches," VII.

Shredded wheat is a breakfast food. (It is an odd coincidence that the introductory part of the architect's dream concentrated on vegetables growing in a garden and V shapes that he associated with vitamins). We begin the day with breakfast and speak so frequently of the morning, noon and evening of life that the analogy between the day and one's whole life is very apparent. In childhood, the morning of life, mother is the provider. Mother and food are the self-same notions for a small infant. The unfailing regularity with which a "green" human being has to be fed may well be symbolized by the remarkable accuracy with which the square projectiles fall into a bowl. (By a strange slip, the patient wrote *bowel* instead of *bowl*, which would have been an interesting cross correspondence in a telepathic operation with the vomiting mother of the architect, had not the two dreams been separated in time and space.) The prenatal supply of the needs of the unborn child makes the maternal body a bowl of plenty. Spectacularly and mysteriously, the falling projectiles may fulfill a fantasy of restitution: reimbursement in full to the maternal body for the food supplied, so that the ties of dependence on the mother could be severed. That, in itself, is a squaring of accounts, a liberation of no uncertain terms.

But beyond this personal significance, a glimpse is afforded us of ancient cosmogonic concepts. The circle with its central point is a symbol of divinity because it shows no beginning or end. The seed within the egg or the child within the mother reveals the divine spirit in dynamic manifestation. The circle was a first, the square came later to represent, to primitive humanity, the shape of the world. Because of the two solstices and of the two equinoxes, the oblong was chosen as a better diagrammatic representation, the profound influence of which is still notable in the building of temples and in the shape of masonic lodges (the initiation rituals of which are symbolic of birth and rebirth).^{*} Hence, it is not a far cry to think of the square (or oblong) as the symbolic dwelling of the incarnated spirit. On this assumption, the squaring of the circle is not a mathematical but a mystical operation. It represents the descent of the spirit (the Word that became flesh) into the body (the temple of the soul, the square) and its re-ascent (circling the square) to God that gave it (the flesh becoming Word again). It looks as if, in the human psyche, the spiral represented the dynamics of the process, as if, from a Catholic point of view, it stood for the Holy Ghost.

As to why, in the dream of the architect, the spiral should be connected with the ear, the answer is relatively simple. When we speak of insight, we make a sensory reference to the eye, though we do not involve it functionally. Spiritual vision is not vision. Hearing as a sensory channel to mental concepts is as important as seeing. The prophets contacted the Lord through their ears. ("Speak, oh Lord, thy servant heareth!") The still small voice today performs a similar function. Only, we call it the voice of conscience. Hence, the spring attached to the architect's ear, on being pulled, stands for extended (extrasensory) hearing. It should have led to insight, but he was not ready for it. He could not fit the small springs of the gadget into their allotted space. He was driven by vengeful feelings in chasing around the block. He went in an "opposite" direction. The spiritual orientation of the post office clerk was superior to his.

* Nander Fodor: "Masonic Dreams, The Masonic Craftsman," Boston, 1942.

If it would appear from all this that simple geometrical forms are being endowed with a mysterious significance, let us remember that no mathematics or geometry would exist if these shapes did not embody a thought or truth. That there should also be a latent thought behind their manifest content should cause no surprise, as it manifests itself in everyday language. We speak of squaring accounts, we resent encirclement, and we gossip about marital triangles. All these are latent contents. It stands to reason that our dream mind would find endless ways and means of adding to them.*

The ease with which such symbols can be infused with life, is perhaps best evidenced in whirlpools, whirlwinds, and tornados. Their spiral movements spell wonder and fear both in waking and dream life.† I shall quote here but one example that illustrates the deep seated anxiety of "the ground is slipping under me."

"I dreamed I was standing on the seashore. The sea was very rough. It came in in high rollers. I was worried about certain rowboats that I knew had to get in. Then I saw the boats coming across the bay from left to right. I expected them to capsize any moment. Huge rollers swept over them but, to my relief, each time they came up again safe. I noticed one head bobbing in the water and expected the boat to pick the man up."

Rollers present an interesting variation of the spiral. Foundering in high seas, on general symbolic grounds, offers the suggestion of the trauma of birth. But the story that emerged from the patient's spontaneous comments and association was concrete enough. His first statement was:

"I still suffer from the anxiety that the ground is slipping under me. Because of it, in my work, I feel sometimes hopeless. I just don't know what the feeling stands for. I feel as if the ground would be taken from under me."

I made the patient relax and start associating. He began:

"A black book is opened up in front of me. I read the words: Fear, fear . . . I can see a blue glass ball spinning around. It draws near, it spins fast, it is now cone-shaped. It is right past me. My head goes right into it. It has tremendous depth. I am looking down to the pointed end."

What do you see?

"Gray like a cloud. Heavy like mud. Lava coming up. It envelops me."

Volcanoes?

"No . . . The glass cone is spinning away like a typhoon . . . no, cyclone over the map of India. I am . . . oh, I know where I am. It is the Central Provinces of India. It is spinning away towards Bengal. I was born in the Central Provinces. I see the map. It

* Thomas Carlyle in "Sartor Resartus": "By symbols is man guided and commanded, made happy, made wretched. He everywhere finds himself encompassed with Symbols, recognized as such or not recognized; the Universe is but one vast Symbol of God; nay, if thou wilt have it, what is man himself but a Symbol of God; is not all that he does symbolical; a revelation to Sense of the mystic God-given force that is in him; a Gospel of Freedom, which he, the Messiah of Nature, preaches, as he can, by word and act? Not a Hut he builds but is the visible embodiment of a Thought; but bears visible record of invisible things; but is, in the transcendental sense, symbolical as well as real."

† Nandor Fodor: "The Search for the Beloved," pp. 100-102.

cracks open again. I am frightened, I'll fall through. I am falling to the right. (Signs of distress, the patient cries: I feel so sick!) I feel rocking. (Signs of nausea, heavy breathing.) Pins and needles in my forehead, down in my legs and arms. I am sick. I am picked up. I am in the nurse's arms. I am frightened of that tipping from side to side. Mother is ill. I cannot go to her. She is lying flat on her back, her legs apart. The nurse is holding me. I want to get to her. I cannot. (The patient squirms, turns in his toes and legs, kicks and breathes heavily.) The cot was nearly upset. That was what wobbled. I nearly fell out. It was an earthquake. It upset me, it made me sick. I still got the pins and needles. I wanted mother to comfort me. I could not go to her. In that sense, the ground was cut under me. That's why things are all wrong. If I could only go to her everything would be all right. If I could just be held in her arms I would be all right."

The patient did go through an earthquake some time after he was born. His mother died when he was six months old. Hence, the emotions he discharged were the fear emotions of a neonate or a very small child. For a certainty, the earthquake fright followed too soon on the ordeal of birth and, apparently, fused into it. The spiralling cyclone is the connecting link.

This is a minimal conclusion. A bigger one should also be considered: whether the cyclone, the cracks in the map and falling through may represent a more remote fantasy, that of conception. The cyclone scene is far more dramatic than the storm over the bay and while it has all the references to birth it also antecedes it by a Fall from Heaven touch. There is a living storm in many prenatal dreams. The hint at conception might be found in two entrances to a beautiful garden, house or room, one standing for birth, the other for entrance into the womb.* To give a sample:

"I am in a beautiful garden, going towards the front with my mother on a road shaped like an S. We arrive at the top of the bend and see a storm ahead. I warn my mother to turn back. Presently, another storm arises behind us. Rain is coming down in sheets alongside the road, without touching us. We get back to the house in time and then the house is caught in a deluge."

The S-shaped road is a variation on the spiral, unfolding both in birth and in conception. Turned back from the conception gate, the patient is caught in a deluge which well symbolizes the breaking of the waters at birth.

Here is a second dream with the symbol of S, from a writer's wife communicated by the husband:

"Martha dreamed that she was on a highway curving like an S. Suddenly, she made a turn to the right and she was in an airplane. She saw an archway and she knew the plane had to go through it. She did not see how it could be done; the wings just barely made it. Then she went up and up with the plane, turned to the right again and found herself in a restaurant where she could get food. She felt a vague someone with her."

Martha was wondering, I was told, if this was a birth dream. Simultaneously, she wanted to know what was the significance of forty, so often mentioned throughout the Bible

*"New Approaches," pp. 94-98.

At the least, the dream speaks of birth, but the two right turns hint at two phases and while the sequence of events is not easy to follow, one of the phases may stand for conception. Perhaps the two curves of the S allude to such a symbolic determinant. As to forty, it points to forty weeks of gestation. The Deluge which lasted for forty days and nights, corresponds—on a racial scale—to the breaking of the waters, followed by birth (emergence from Noah's Ark), and the forty years of wandering in the desert is the prelude to the birth of Israel as a nation.*

Who was the vague someone? We can only guess that it is the mother (whose presence is clearly admitted in the first S-shaped road dream). The vagueness is probably deliberate, a symbol in itself. Mother is not a person before birth and after conception, it is a cosmic element. The promise of religion that we shall see God may have originated in dim sensations rising from the prenatal level of our mind of an overwhelming and awe-inspiring presence. In this sense, the religious feeling must be innate in every man, and the S-shaped road leads both to Mother and God.

The letter S, or the road which takes its shape, curls like a snake, and the snake is another living substitute for the spiral. The expression "holy snakes" associates with primitive customs of snake worship. In Eastern mysticism we find it represented by the Kundalini, the serpent power that lies curled up at the base of the spine and rises into the head when (with considerable risks to the experimenter) it is awakened. The magical significance of Kundalini is well illustrated by the dream of the wife of a psychoanalyst:

"A serpent was coiled around my neck and mounted over my head. I pulled my head out of the coils, and the serpent stayed poised above my head. I said to myself: I must tell this to my husband. I shall find him *up* in the cellar. I flew to the top of the house and in through an arched window. In the room at a desk sat my husband. After a moment, he changed into my grandfather and finally to Eliphas Levy."

The arched window is a symbol of entrance into a higher spiritual life. Because of this lady's extensive study of magical lore, the snake inspired no fear. In real life, she had a horror of them. The average dreamer is very upset by the sight of snakes and almost invariably tries to kill them.

A professor of mathematics wakes up feeling troubled. He does not remember his dream but states:

"All I could think of was an empty skull, with some big worm or snake in it."

An insurance man dreams of looking for termites in his cellar. He finds a hole in the concrete flooring from which a big horse fly crawls out. He kills it with a gardener's trowel. Then a "bull-headed" snake wriggles out of the hole. He kills that, too. A young man tells him that the snake will be back and he recalls a saying that even though you kill a snake there is life in it until sundown. He runs away frightened.

The horse fly, in association, became the Flying Horse, Pegasus. The patient had a phobic attitude to his unconscious creative drives, a phenomenon frequently encountered in neurotics who usually identify the snake with their frustrated libido.

* "New Approaches," pp. 50-51.

Here is a dream that shows an attempt at coming to terms with it, domesticating it: "A snake tail curls up from the mud. Father takes position to demonstrate how to pull it out. Putting one leg back, with a quick jerk, he whips the snake out of the mud. Lo, it turns out to be a duck."

The next dream, in a much odder setting, conceals the snake in the long neck of a goose:

"I am undergoing Bar Mitzvah in the old synagogue. The rabbi calls me to the pulpit and informs me that I am not wearing my tallith. On returning from the pulpit, I see a goose in the aisle. I grab it by the head and begin to whirl it, wringing its neck. I vaguely recall the presence of the cantor wearing a large hat over a small skull cap. Going to the Ark to fetch the scrolls, he told me that I could put on the big hat in order to sing my part of the service."

The scrolls form a spiral. Bar Mitzvah is an initiation into manhood, a pubertal rite. Among savages, the prerequisite to this initiation is the killing of the first enemy. The taking of a wife is not allowed until then. Instead of a human enemy, he kills "the silly goose" (his own association), his neurotic, or his lower self by using the goose as a bull roarer, the sound of which—among savages—heralds the inrush of the spirit. After the killing, he is permitted to mount the pulpit and put on a big hat, a man's hat, a symbol of maturity or psychoanalytic integration.

It follows by no means, from these examples, that a spiritual significance is to be sought behind the average snake dream. It may not represent more than horror, perversion, or other libidinal problems. Of the latter, the following short summary is a good illustration:

"I love snakes," a woman confesses. "I am fascinated by seeing them anywhere. The bigger they are the more interesting they seem. At the age of 11, in the woods I was bitten by a Kreuz adder. I did not notice it, except I felt the sting. My boy companion, however, saw the adder wriggling away, sucked out the blood from the wound and spit it out. Then he bandaged the leg. Later, the wound was cauterized. The astonishing thing was that I felt positively delighted at having been bitten by the snake. If I go into a zoo, the first thing I see is the snake den. Sometimes I have fantasies of a huge snake coiling over my body and compressing it until the bones crack. I suppose I am a masochist. Such fantasies give me an erotic satisfaction no man can give. My favorite vision is to see a snake strike. Once in the movies, I saw a big snake swallowing another snake, and I became fearfully excited."

Religious neurosis emerged from the following dream of a Greek Catholic clergyman.

"I am going to Africa with a friend of mine whose name is Fromm (which I know means *pious* in German) for some scientific exploration (which is the least likely thing I would do). In Africa, we are captured by Mohammedans who make all sorts of threats, saying they are going to teach us a lesson and that it is too bad they cannot teach us many because they would like to. One has a big whip and as he hits Fromm with it, the whip curls around the body like a snake from the waist up until the tip is curled around his neck. Then the same thing is done to me. The man with the whip says: we must avenge Israel."

Africa is the dark continent of the unconscious. This patient was very fluent in his associations. Fromm stood for religious feelings and the Mohammedans for religious conflict.

Israel, he explained, was the symbol of the Father God, Jehovah, the Avenger, and the whip stood for self-castigation.

Note that the loops of the whip, from waist up to the head, fit in well with the concept of the Kundalini. The deeper he was steeped in lecherous fantasies of both hetero- and homosexual nature, the keener became his desire for redemption. He was an alcoholic, too, and loved the service because the sacramental wine was free. The day before the dream, he spilled some of it and became very upset. He licked it off his hand and then the thought struck him: Christ's blood is on my hand—and he developed a palpitation of the heart. He quieted himself by answering back: it is the Blood of the Lamb that washes me clean. He volunteered that the two instances of whippings stand for the two snakes on the caduceus of Aesculapius, the Greek God of Medicine, and that the healing understanding, as far as his religious conflicts are concerned, is a reliance on the words of the Twenty-third Psalm: "Thy rod and thy staff they comfort me." The two snakes, the three religions, and the staff of Aesculapius thus appear wrapped into a very neat package in this unusual dream.

It is worth calling attention at this point to the fact that the caduceus is roughly reminiscent of the figure 8. Whether this figure is looked upon as a combination of two S's, two spirals, or two snakes, through the inexhaustible ingenuity of the dream mind we have another representation that can be imbued with unexpected meanings.

That for the purpose of psychosis the snake symbol offers frightening possibilities, is apparent from the case of a girl who made a life-time job of constipation and developed a vicious spell of insomnia that gradually drained her of vitality:

"I dreamed that the road home was a hilly, icy road that looked like a roller coaster. It was a serpentine road (which reminds me of a snake I saw doing ballet in Walt Disney's *Living Desert*). My brother Julie was driving the car and I was afraid the car would fall off the road. I woke up squirming and twisting with fear."

Squirming and twisting is a good description of intestinal activity. It was possible that the dream spoke of fear in the guts. Indeed, the daughter of a friend of the dreamer had diarrhea the night before. It was rather severe and she wondered if that provoked the dream. As to brother Julie, he recalled a story: as a small boy, he went to the ice box, ate an enormous quantity of cold cuts and became deathly sick. The subject of bowels (that squirm like a snake) was very important in her house. Mother always had difficulties and every night there was a brew of senna leaves on her night table.

If the turning and twisting stood for an attempt to move the bowels, we can understand how the fear of the guts ties together with insomnia. One cannot move while one is asleep (at least not much). Move and movement (of the bowels) form an equation. Thus, being motionless in sleep spells death to the guts.

The following night the patient went through a severe psychotic attack. She woke up hearing the words in her mind: you are nothing but a piece of shit, a snake. Whereupon she began to act as if she had become a snake. She backed into a corner, twisted, squirmed, hissed, made faces and was ready to pounce on anyone coming in. She felt seized by a terrific desire to go down on all fours and crawl. Her mother heard the sounds of distress from her room, came in, and succeeded in calming her down.

"I was having convulsions practically . . . Jeepers-creepers, mother used to say that I had mysterious convulsions when I was very small if they did not feed me on time . . . Last night I felt like Kafka's hero who changed into a cockroach. I thought I was a snake, and—at the same time—a piece of shit."

Regression to the gut level, obsession of the whole of the personality by an organ—a truly extraordinary and alarming state of affairs. As if the patient, as a person, had been swallowed by the snaky bowels and the part had tried to function as a whole.

Some linguistic expression may help us to understand the process. We call a person all eyes or all ears when all vital activity is focussed in one of these organs. In a derogatory manner, we may call a man a "prick" and a woman a "cunt" to indicate the sexual function as the whole reason for their existence. Jokingly, we may personify diarrhea and call it Miss Lucy (loose) Bowels. But none of these instances imply a complete surrender of the whole personality to an organ. Such surrender is somatic psychosis. My patient might as well have changed her name to Miss Bowels. She stopped being the gentle creature I knew so well. Her clarity of mind was no longer a constant. It eclipsed too easily. Her relationship to me changed into extreme hostility. Guts have no friends. Possibly, any organ that usurps the total personality will become paranoid. She hated my guts because I, too, was a snake and a hostile one. The analytic relationship that lasted for many years and had saved the patient from an ever-threatening psychosis, came to an abrupt end. She became unmanageable, manic. Shock treatments were resorted to. Miraculously, in a short time, the patient made a complete recovery and, at last, was through with her bowels.

In contradistinction to the snake, the sea shell—another living symbol of the spiral—rarely inspires fear. The birth symbolism is often self-evident. After a dream of self-trial for abortion, a woman continued seeing, in a half-awake state, a urinal bottle. "It changed into a white China spiral which reminds me of shells on the beach shaped like horns of plenty."

From the point of view of the unborn child, the horn of plenty is the womb. To this patient, the vagina always "felt" like a shell—a curious merging of tactile sensations into an apperception of symbolic values.

The fear element, in a detached fashion, appears in the dream of another woman:

"From one corner to another a cat was running to a hole in which a tiny mouse disappeared. We were all waiting for the mouse to come out and for the cat to catch it. But the mouse was not a mouse. It was a little shell."

To this patient the cat was always a male. She associated it with her analyst. What did she want me to pounce upon? After considerable resistance, I concluded that the tiny mouse stood for a baby and that she wanted me to speak of the trauma of birth. Young children are sometimes described "as lively as a little mouse." There is no reason why a mouse emerging from a dark orifice and about to meet with destruction should not represent the neonate's appearance in a strange and hostile world. It appeared later that this patient had suffered from a strong auditory trauma: a church bell phobia which went back to the clamor of village bells on the day and time of her birth. Owing to the popular identification of ear with shells, her dream was not as odd as it first appeared.

This auditory element also appeared in the dream of another woman who desperately yearned for a child. There was a house for sale, the roof of which was made of beautiful conch shells. As shells come from the bottom of the sea, my first impression was that the roof must be a displacement for an underground place (as in the dream about Eliphas Levy in which the dreamer tried to find her husband "up in the cellar.") But her dream also called alternating attention to a cacophony of sounds and to lovely music that reminded me of the murmur in the sea shells.* A few questions brought forth the following information:

"While in college, I had an abscess in both ears from swimming. The doctor said I might have a slight heart murmur. Before the year was out, he was definite about it. This caused a great deal of aggravation because I thought it might interfere with pregnancy. It did. By the time I went to the specialist, my blood pressure was very high and, subsequently, I lost the child by miscarriage.

"Something else happened at that time which was odd. My hearing became affected for a while. I discovered it in the street car. It was singularly quiet. When I arrived at the school, everybody was speaking softly. Then I knew I was losing my hearing. Further, during the fever with ear inflammation, I heard constant music. It was always my favorite piece. Suddenly, it occurred to me that I might be hallucinating. I began to think of another piece, and the music changed to that."

What an interesting compensation for loss of hearing! The conch shells covered the roof like slates. The roof of the body is the head and the ears are the nearest organ to the top. Heart murmur (associated with sea shells), high blood pressure, and pregnancy were added into the sea-shell symbol for good measure. Instead of unfolding, the conch shells indicate the reverse: infolding or involuting, illustrating the point that for the unconscious a thing can stand for itself and its own opposite. Which brings us very near to the Indian philosophic claim that life is nothing but maya: illusion.

One last word: the earth revolves daily around its own axis as it proceeds on its elliptical orbit around the sun. In doing so, it goes through a series of spiralling motions. The sun performs similar revolutions as it races, with the whole of the solar system, toward the constellation of Hercules on a stupendous orbit. The other fixed stars are no more fixed than our sun. Hence the spiral as a pattern is as outstanding in the vaults of the heavens as in the secret places of the mind.

* "Shells were supposed to assist birth and afford magical protection against the various evils which threatened mankind. The ease with which the shellfish emerged from its shell was desire by the mother about to give birth to a child. . . . It is possible that they (shells) were regarded as little caves in which the inhabitants took refuge as did the hunters themselves in mountain caves. As we have seen, these caves were evidently connected with the idea of birth; the winds were supposed to originate in caves and 'earth holes.' Perhaps this belief had origin when shells were identified with caves. Mr. Wilfrid Jackson suggests that to the early people 'the murmur of the shell was the voice of God and that was why ultimately the trumpet made of shell became an important instrument in initiation ceremonies and in temple worship'." Donald A. Mackenzie: "The Migration of Symbols," p. 141.

ABSTRACTS

psychiatry

ADMINISTRATIVE PSYCHIATRY AND LEGAL ASPECTS OF PSYCHIATRY

90. *The Utilization of Psychiatric Marginal Manpower in Military Service.* E. L. CAVENY, Washington, D. C. Ann. Int. Med. 42:659-667, March 1955.

In the past few years from various research projects, many thousand objective records of service personnel have been scientifically studied and evaluated. From these studies, many factors of inestimable value have been brought forth, particularly regarding the utilization of marginal manpower. The records of several hundred known marginal individuals have been studied in detail over a period of their three-year naval service, both as a group and diagnostic type. Various factors are clearly revealed: the desirable objective of excluding all men from military service who might become psychiatric casualties can only be attained by excluding too great a segment of manpower resources; the marginal group not only can, but must be utilized when the exigencies of the situation bring about a manpower shortage; the effect of a "selecting-in" in contrast to a "selecting-out" program; the presence of marginal individuals in causing the incidence of hospitalization and disciplinary difficulty to be much greater, even though still meeting the group adjustmental standards; the hidden and greater cost in providing for the additional demands made by this group on medical and disciplinary facilities; and foremost, research in this sphere is a continuous process if the military services are to keep abreast the current era. The results of various research projects portraying the use of marginal manpower, physically as well as psychiatrically, is presented in concrete objective form, statistically and graphically. 7 references. 6 figures.—*Author's abstract.*

BIOCHEMICAL, ENDOCRINOLOGIC, AND METABOLIC ASPECTS

91. *Investigations into Glutamic Acid Metabolism in Schizophrenics.* POUL ASTRUP, H. GÖTZSCHE, B. IBSEN, IB MUNKVAD, Copenhagen, Denmark. J. Ment. Sci. 101:366-369, April 1955.

In six mentally normal persons the glutamic acid concentrations have been ascertained to be above 1.2 mg. per 100 ml. in venous blood of muscles, kidney, and brain.

The glutamic acid concentrations in mentally normal persons are of equal magnitudes in the blood of peripheral veins and arteries.

In 4 out of the 5 chronic schizophrenics examined there are low glutamic acid concentrations in the renal vein, presumably an indication of arteriovenous glutamic acid deficiency.

In 4 out of the 6 patients with acute schizophrenia examined there are low glutamic acid concentrations in both the jugular and renal veins and in veins of muscles, indicating arteriovenous glutamic acid deficiency in these organs.

The glutamine concentrations showed no significant deviations. 4 references.

92. *Some Behavioral Effects Associated with Feeding Sodium Glutamate to Patients with Psychiatric Disorders.* H. E. HIMWICH, K. WOLFF, A. L. HUNICKER, AND WILLIAMINA A. HIMWICH, Galesburg, Ill. *J. Nerv. & Ment. Dis.* 121:40-49, January 1955.

In a series of observations of patients with psychotic disorders, made over a period of 11 months, examiners, completely unaware of which patients were alternately placed on sodium glutamate or placebo, rated the patients for psychologic, physiologic, biochemical, and behavioral effects. The statistical analyses of perceptual and motor coordination tests failed to disclose any significant changes associated with glutamate feeding. Similarly basal metabolic rate, EEG, ECG, pupillary dilatation, blood pressure, heart rate, respiratory rate, oral temperature, and weight did not reveal consistent alterations as a result of the medication.

In contrast, 17 of 27 patients receiving monosodium glutamate showed clinical improvement: 16 in action, 12 in emotion, 9 in intellect, 8 in interpersonal relationships, 5 in thought processes, and 2 in insight. Equally good results were obtained with 15 Gm. 3 times daily or 5 Gm. 3 times daily, while toxic side reactions sometimes seen with the larger doses were avoided. We realize that we have studied a small group of patients. Whether or not the same conclusions would be revealed by the examination of a larger number of patients can be decided only by further work.

Biochemical studies disclosed that even with 15 Gm. of glutamate administered 3 times daily the level of that substance in the blood was raised above the normal for periods of only one-half day or less. In the course of the biochemical studies a possible cause for the discrepancy in the literature was uncovered, namely that previous investigators had fed glutamic acid in three different forms: glutamic acid hydrochloride, glutamic acid, and sodium glutamate, compounds not equally absorbable into the blood stream. 43 references. 3 figures. 4 tables.—Author's abstract.

CLINICAL PSYCHIATRY

93. *Investigation of the Validity of Halstead's Measures of Biological Intelligence.* RALPH M. REITAN, Indianapolis, Ind. *Arch. Neurol. & Psychiat.* 73:28-35, January 1955.

In 1947 Halstead described and presented results for a battery of tests which

seemed to have specific value in differentiating brain-damaged and control subjects. He found that patients with frontal lobe damage (unilateral or bilateral) did more poorly than did patients with nonfrontal damage, and these in turn performed more poorly than patients without brain damage. This study was designed to test the validity of the Halstead battery with respect to brain damage, although not with respect to localization of lesions. Fifty patients with brain damage of varying type, location, and extent were individually matched with control patients on the basis of color, sex, age, and education. The control group deliberately was composed primarily of neurotic and paraplegic patients in order to provide a rigorous test of the differentiating ability of the battery. The results indicated highly significant intergroup differences on all tests except two which were based upon critical flicker frequency. Not a single patient with brain damage obtained a better score on the Halstead Impairment Index than did his matched control. These results suggest that the Halstead battery reflects rather specifically the organic condition of the brain. Since these results were obtained regardless of location or type of brain damage, they suggest a possibility for their use in comparisons of the differential effects of various disease processes as well as lesions in different locations. 12 references. 2 figures. 1 table.—*Author's abstract.*

94. *Suturing the Schizophrenic Split.* RICHARD L. JENKINS, Washington, D. C. Arch. Neurol. & Psychiat. 73:110-117, January 1955.

Advance in the therapy of schizophrenia has been handicapped by the lack of a satisfactory understanding, or even a satisfactory working hypothesis, of the nature of the disorder itself. The paper discusses a working hypothesis which arises in part from a synthesis of ideas borrowed from Hughlings Jackson with ideas borrowed from Eugen Bleuler.

Evolution toward flexible, adaptable behavior involves evolution away from patterns of behavior rigidly laid down by heredity, such as we see so highly developed among the insects. It involves evolution toward more and more complicated and difficult choices between alternative patterns of behavior. The very existence of such alternative patterns immediately underlines a possibility of conflict, a possibility which is accentuated as choices become more frequent, more complicated, and more evenly balanced. A price we pay for our cerebral hemispheres, for our capacity for foresight, and for our capacity to adapt is an accentuated vulnerability to conflict.

Physiologically speaking, conflict may be regarded as activation of two (or more) neural patterns tending toward discharges which are mutually incompatible. When two neural patterns tending toward incompatible discharges are activated simultaneously, one may become dominant over the other and may thereby determine the pathway of discharge. On the other hand, each may block the discharge of the other. If the tension in one or both systems is thereby increased, the neural impulses so blocked may be expected to show a tendency to spread into other channels.

In a state of conflict, with the activation of two neural patterns tending toward

discharges which are mutually incompatible, and which block each other, and particularly with an intensification of activity probably mediated by a positive feedback of cortex to diencephalon, we might expect the spreading of nerve impulses out of their usual pathways. This spread would represent a relative diffusion of neural excitement, as contrasted with its narrower and more usual channelling. Such diffusion might result in new pathways of discharge, which might effectively relieve tension in both systems. Such a discharge of tension from two sets of neural pathways would represent a synthesis and may be assumed to be one of the physiological events which accompanies the moment of insight or of creativity.

That which distinguishes the schizophrenic is that his puzzlement does not come to a satisfactory and realistic solution with relief of tension. It persists. The puzzlement, vagueness, relative disconnectedness, and lack of effective organization of thinking which are so common in the early schizophrenic are the psychologic accompaniments of brain activity which is diffuse rather than patterned, which is unresolving, and which tends to jam the higher pathways of the brain and reduce their availability for the guidance of adaptive behavior.

In relation to this hypothesis, the measures of treatment utilized with schizophrenic patients may be grouped as follows:

1. Measures which seek to relieve the diffuse activity by bringing about a direct resolution of the patient's central conflict.
2. Measures designed to reduce the morbid feedback of cortex to diencephalon and thereby to reduce the intensity of the patient's conflict and resultant diffuse brain activity.
3. Measures designed to draw the newer and higher brain structures back into the service of day-to-day adjustment.
4. Measures designed to combine some of the foregoing. 14 references.—*Author's abstract.*

95. *Psychiatric Research in a State Psychiatric Hospital.* ALBERT A. KURLAND, Catonsville, Md. Maryland State Med. J. 3:611-614, November 1954.

In an endeavor to investigate the factors influencing the status of psychiatric research, the Spring Grove State Hospital was studied. A roster of physicians who had worked in the hospital since its founding over 155 years ago was prepared, and their publications listed. An evaluation was then made of the problems encountered in the present attempt to develop an active research program in this hospital. One of the most important factors revealed was the need for a supporting structure to carry on an organized research program in a hospital crowded with patients and overburdened personnel.

As a result of this recognition a research department was created which in July 1954 completed its first year. The program it developed is outlined. This program operated within a very limited budget and rendered assistance to other investigators in carrying out their special studies.

The goals which are being striven for are: (1) a certain degree of flexibility in planning; (2) an expansion of an extremely limited research budget (0.5 per cent of the hospital budget) to the point where it could be possible to have the necessary personnel to carry on a multidisciplinary approach; (3) to obtain funds to provide compensation for members of the staff who may wish to carry out investigations as an extracurricular activity, and (4) to bring about a state of affairs where the practicing psychiatrist in the community will be able to avail himself of the facilities for doing research to complement the assets of his years of clinical experience. 6 references.—*Author's abstract.*

96. *Two Psychiatries: Problems in Teaching Them.* WILLIAM F. FEY, Madison, Wis. J. Med. Educ. 30:97-105, February 1955.

The unique status of psychiatry within medicine is ascribed to its dual nature—as a technical specialty and as a personal and interpersonal philosophy. This duality suggests a need for different pedagogical approaches. The traditional didactic methods are critically examined for their relevance to these tasks, and a compromise solution is proposed which seeks to reconcile these disparate aims. 3 references.—*Author's abstract.*

GERIATRICS

97. *The Problem of Convulsive Disorders in Geriatric Psychiatry.* SIDNEY MERLIS, FRANCIS J. O'NEILL, AND FREDERICK WEINBERG, New York, N. Y. Psychiat. Quart. 29:74-84, January 1955.

Two hundred and fifty institutionalized epileptics with concomitant psychiatric disorders, all over the age of 55, were studied to correlate the effects of aging on the morbidity and prognosis of convulsive disorder. Five questions are posed as follows:

1. What happens to an epileptic as he grows older?
2. Do the character and frequency of his convulsions change with age?
3. What are the best methods of treatment of epilepsy in the aged?
4. Does the epileptic live as long as individuals in a similar environment without epilepsy?
5. Are the causes of death in aged epileptics today any different from those in nonepileptics of a similar age group?

Evidence is presented to indicate that the majority of patients with convulsive disorder tend to improve with age. In the light of our present knowledge, the problem of epilepsy in most cases in our geriatric population can be managed adequately. Such patients can be expected to live a normal life span in spite of their convulsive disorder. The causes of death are not significantly different from those in nonepileptics in the geriatric group. 1 figure. 9 tables.—*Author's abstract.*

98. *Affective Disorders Arising in the Senium. I. Their Association with Organic Cerebral Degeneration.* D. W. K. KAY, MARTIN ROTH, AND BARBARA HOPKINS, Chichester, England. *J. Ment. Sci.* 101:302-316, April 1955.

The association of cerebral degeneration with affective disorder arising for the first time in the senium has been examined by comparing two groups of patients: (a) those who had fallen ill for the first time before 60, and (b) those in whom the first attack had occurred at the age of 60 or later.

The two groups showed a similar incidence of signs indicative of or liable to be attributed to cerebral disease. Nor is there any difference between the two groups in respect of mental test performance. Cases of affective disorder with both early and late onset are exposed to some risk of suffering from cerebrovascular disease in old age. A review of the relevant evidence suggests that this is probably no greater than the risk in the normal population; the slight excess of cases with cerebrovascular symptoms found in follow-up of the group with late onset is likely to be due to its greater mean age. But further investigations into a possible association between cerebrovascular disease and affective symptoms are indicated.

The pattern of outcome of the two groups is closely similar, with high discharge and low mortality rates, which sharply differentiate them from the organic groups proper. But attention is drawn to a small group of "mixed" cases which carry a far worse prognosis.

There is reason to believe that the slightly greater mortality of the group of late onset represents a real difference though it is not significant. It is linked with the higher incidence of physical illness of this group; the etiologic role of this is examined in another paper.

The conclusion is reached that cerebral degeneration of the kind found in the senile and arteriosclerotic psychoses is unlikely to be an etiologic factor of any importance in the causation of affective psychosis in late life, whether or not this appeared in the senium for the first time. Depressive or manic psychosis of late onset may be regarded together with affective disorders of earlier life as forming a nosologic entity distinct from psychoses with cerebral degeneration. 18 references.—*Author's abstract.*

99. *The Natural History of Mental Disorder in Old Age.* MARTIN ROTH, Chichester, England. *J. Ment. Sci.* 101:281-301.

The case records of 450 patients were studied and classified into five previously defined diagnostic groups: affective psychosis, senile psychosis, late paraphrenia, acute confusion and arteriosclerotic psychosis. Affective psychosis accounted for over half the cases in the total material. Follow-up studies showed that at six months and two years after admission each of the five disorders is characterized by a distinctive pattern of outcome as described by the proportion of patients dead, in hospital and out of hospital.

Examination of differences in pattern of outcome between specific groups provides strong confirmation for hypotheses suggesting that affective psychosis, late

paraphrenia and acute confusion were each entities largely independent of the two main causes of progressive dementia in old age: senile and arteriosclerotic psychosis. The relevant differences between the groups were largely independent of differences in age distribution.

There is some evidence to suggest that the findings may have a bearing upon the problems of old age mental disorder faced by hospitals in other parts of this country.

The overlap between the senile-arteriosclerotic group on the one hand and the affective-paraphrenic group on the other was relatively small. But if all kinds of affective disturbance are reckoned, their incidence in arteriosclerotic psychosis is greater than is likely to be accountable in terms of fortuitous coincidence.

Problems for further study are discussed. Investigations into the differences between and within the groups might lead to the identification of factors of practical or etiologic significance. 20 references.—*Author's abstract.*

100. *Mental Disorders of the Aged in Japan.* NAHOTAKE SHINFUKU, Yonaga Acta Medica. 1:115, December 1954.

The highest incidence of psychoses among men and women in Japan occurs between the ages of 50 and 55, with a steady decline thereafter—exactly the reverse of the trend in the United States, according to this study based on data from 50 psychiatric clinics in various districts of Japan.

In a study of 60,587 psychoses occurring between the ages of 40 and 60, the figures given for males and females respectively are: psychoses due to aging: 16.9 and 15.3 per cent; general paresis, syphilitic, alcoholic and traumatic psychoses: 33.4 and 11.4 per cent; manic-depressive states and involutional melancholia: 41.7 and 56.4 per cent; schizophrenia and paranoid conditions: 8.0 and 16.9 per cent.

In the group called functional psychoses, classified in the study as manic-depressive psychosis, involutional melancholia, neurosis, and psychogenic psychosis, the peak for both males and females is reached between the ages of 50 and 55 with rates of 20 and 17 per 100,000 respectively. These rates are reduced by half between the ages of 60 and 65, and continue to decline thereafter.

Reasons given for this relatively low rate of psychoses among the aged are that older people in Japan are usually cared for by their families and thus avoid loneliness; the patriarchal culture pattern and the worship of ancestors permits better integration of the aged in the over-all social pattern; the Buddhist religion induces a calmer view of aging and death, without the tensions found in Western countries.

PSYCHIATRY OF CHILDHOOD

101. *Treatment of Childhood Schizophrenia.* L. F. EICKHOFF, Birmingham, England. J. Ment. Sci. 101:399-403, April 1955.

The treatment of a 6½ year old girl schizophrenic on an outpatient basis is

described briefly. She emphasizes the importance of physical contact between the therapist and patient, as in massage, gymnastics, ballet-dancing, and so on. The normal discipline of class routine was found to have a beneficial effect on personality development.—*Author's abstract.*

PSYCHIATRIC NURSING, SOCIAL WORK, AND MENTAL HYGIENE

102. *Social Psychiatry—A Definition.* THOMAS A. C. RENNIE, New York, N. Y.
Int. J. Soc. Psychiatry 1:5-13.

Social psychiatry is the study of etiology and dynamics of persons seen in their total environmental setting. The findings of the various similar researches contemporaneously under way in such different settings as rural Nova Scotia, urban Syracuse, New Haven, New York, Baltimore, etc., and the possibility of sharing and comparing such diverse data should enable us to move forward in the understanding of the total forces significant in human adaptation.

TREATMENT

a. general psychiatric therapy

103. *Rehabilitation of Chronic Schizophrenics by a New Method of Occupational Therapy.* E. D. WITTKOWER AND JOHN D. LA TENDRESSE, Montreal, Canada.
Brit. J. Med. Psychol. 28:42-47, Part 1, 1955.

The prevailing principle underlying application of occupational therapy to the mentally ill is that *occupation* is an antidote to *preoccupation*. It was felt that the value of occupational therapy for the mentally ill could be enhanced and a scientific theoretical basis for its application be provided should the media offered be adapted to the regressive needs of the patients.

This hypothesis was tested on 12 severely regressed female schizophrenics, with 6 in a test group and 6 in a control group. For one week a daily 24 hour record of the patients' behavior in terms of stool-smearing, incontinency, clothes-tearing, and striking others was kept. Afterwards the test group was exposed to primitive media for 1½ hours daily while the control group was treated with traditional occupational therapy.

Dry soil was the first medium of activity in the test group. During the third week water was introduced. Most patients took interest in the mud. By the end of the third week no feces were produced during the period of activity, but aggressive behavior increased. By the end of the first month, 2 of 5 mute patients had verbalized. The second month was stormy, but there was increasing evidence of interaction; a third mute patient verbalized. Horns, jumpropes, and finger-painting were tried. Interpersonal activity increased in the third month and production of genital material was more evident. Another mute patient spoke. Soil was replaced by cocoa powder. In the fourth month when attractive clothes,

make-up, music, dolls, crayons and coloring books were made available further rapid progress was noticeable. Since some patients were ready for a more highly integrated medium a rug frame was added during the fifth month. Walks about the grounds and dancing were initiated; gradually the group became more socially integrated. Wall painting and tea parties followed. By the end of the sixth month, 5 patients were well enough to be moved to a quieter ward. Little change other than some improvement in toilet habits was observed in the control group. Follow-up 8 months afterwards showed that 3 patients had maintained their improvement; 2 had received E.C.T. to which they responded well; 1 was unsuccessfully lobotomized.

If it is possible to effect far-reaching changes in grossly deteriorated schizophrenics of long standing one may well speculate (a) whether or not better results might have been obtained in acute schizophrenics and (b) whether the patients studied might have reached their pretest state had they been handled differently earlier in their illness.—*Author's abstract.*

b. drug therapies

104. *Treatment of Two Hundred Disturbed Psychotics with Reserpine.* JOSEPH A. BARSA AND NATHAN S. KLINE, Orangeburg, New York. J. A. M. A. 158:110-113, May 14, 1955.

Two hundred female psychotic patients were treated with reserpine. The patients were chosen for their excited, hyperactive, assaultive, or destructive behavior, or because of profound stupor. Their ages ranged from 15 to 70. One hundred and fifty-nine were diagnosed as schizophrenic. One hundred had been continuously hospitalized for more than five years.

Treatment was carried out for a minimum of three months. A daily oral dose of 3 mg. reserpine was given throughout the entire course. In addition, 5 mg. was given intramuscularly for the first 10 days, and, if the response proved favorable, the intramuscular medication was gradually withdrawn. However, if beneficial response was not obtained at the end of the first 10 days, the 5 mg. intramuscularly was continued for six more days. Then, if necessary, the intramuscular dose was increased to 10 mg.

Patients were observed to pass through three stages in the course of treatment: the sedative period, in which the sedative effects were most prominent; the turbulent period, in which the symptoms grew worse, and the integrative period, in which the personality was gradually integrated, and delusions and hallucinations disappeared.

Of the 200 patients, 44 were markedly improved, i.e., free of delusions and hallucinations and able to adjust adequately outside of a hospital; 76 patients were moderately improved; 52 slightly improved; and 28 unimproved. Although 8 per cent of the patients continuously hospitalized for more than 5 years were markedly improved, it was found that the longer a patient had remained in the hospital, and the longer the patient had been ill, the less were her chances of achieving a moderate or marked improvement.

Side-effects were not serious, and none were permanent. Drowsiness and a sense of fatigue were frequent manifestations during the sedative period. Generalized tremulousness, increased salivation, dizziness, edema of the face and feet, frequency of urination, and paresthesias of the extremities were often experienced during the early weeks of therapy, especially during the turbulent period. Five patients had convulsive seizures for the first time during the first six weeks of therapy. Ten patients developed a typical picture of parkinsonism, which disappeared when the dosage was reduced. A few patients showed an organic type of mental confusion; this was a sign of reserpine toxicity and necessitated the reduction of the dose. Anorexia, after an earlier increase in appetite, was also usually a sign of overdosage of reserpine. 8 references. 2 tables.—*Author's abstract.*

105. *Histamine Therapy for Schizophrenia: A Follow-up Study.* A. HOFFER AND S. PARSONS, Regina, Saskatchewan, Canada. Canad. M. A. J. 72:352-355, March 1, 1955.

Twelve schizophrenic patients ranging in age from 15 to 45 years were treated with histamine following the procedure laid down by Sackler *et al.*, J. Nerv. & Ment. Dis., 110:149 (1949). The patients were followed up in the community with regard to social improvement. The usual psychiatric criteria showed 7 of the 12 patients improved on discharge. However, on follow-up only 4 patients were improved one year after discharge. Follow-up criteria included three areas, that is, personal, social, and vocational adjustment. Patients were considered improved only if in these three areas of adjustment they had attained the pretreatment level. There was no relation between chronicity and response to histamine nor to sex. Out of this small series, the four youngest patients treated showed the best response to histamine.

Although the immediate results appeared good, patients quickly relapsed. If schizophrenia is a biochemical disease it is too much to expect treatment to maintain a remission, since presumably biochemical pressures will again produce the illness. It is possible that daily administration of histamine might have maintained better remission rates. 8 references. 2 tables.—*Author's abstract.*

106. *Oral Metrazol in the Psychoses Associated with Old Age.* LEO HOLLISTER AND WALTER F. FITZPATRICK, Palo Alto, Calif. J. Am. Geriatric Soc. 3:197-200, March 1955.

The use of oral Metrazol in the treatment of psychoses associated with old age was studied, using a double-blind control. Forty patients were studied, half of whom received Metrazol orally in daily doses of 0.8 Gm. for 60 days. The other 20 patients received identical placebos. In the period of the study, minor degrees of improvement were noted in 10 patients. Five of these 10 patients received placebos, indicating that improvement was due to chance variation in the clinical course of the psychoses rather than the medication. Although the group of patients studied had a high degree of disability, 7 of the 9 patients least disabled

received Metrazol rather than placebo. Only 2 of these patients improved on the drug. No harmful effects of the drug were noted. It is concluded that oral Metrazol was without value in this group of patients hospitalized for psychoses of old age. 12 references. 1 table.—*Author's abstract.*

c. psychotherapy

107. *Effect of Group Activity on Psychogenic Manifestations of Older People.* JEROME KAPLAN, Minneapolis, Minn. *Geriatrics.* 9:537-539, November 1954.

The observations contained herein are based primarily on four years of empirical evidence on approximately six thousand (6,027) people aged 60 to 101 who have become active in senior adult groups or have continued or renewed their active associations within some kind of social group.

Many people who have retired, either on a compulsory or voluntary basis, appear to deteriorate rapidly in social consciousness, physical appearance, or emotional stability, for lack of some meaning and pleasure in day-to-day living. Preliminary findings show, however, that many old adults have staved off deterioration and residency in a mental institution because of the stimulation provided through senior adult clubs and other types of group living. Perceptible decreases in requests for medical assistance have been noted as a direct result of well-planned recreation programs. For others, somatic complaints and developing aberrations have been halted resulting in a more equitable balance of concern for "self," "others" and the world around them. The evidence in this empiric study shows that over-rapid senescence may be controlled in some instances by an environment in which older people could meet their own needs in their own way through satisfying group experiences.—*Author's abstract.*

For Reference

108. *A Procedure for the Systematic Analysis of Psychotherapeutic Interviews.* STANLEY H. ELDRED, DAVID A. HAMBURG, EUGENE R. INWOOD, LEON SALZMAN, HERMAN A. MEYERSBURG, AND GENEVA GOODRICH, Washington, D. C. *Psychiatry.* 17:337-345, November 1954. 4 references. 6 tables.—*Author's abstract.*

109. *A New Method of Psychotherapy. "La Chitamnie" (Une nouvelle méthode de psychothérapie: la chitamnie.)* HENRI BARUK. *L'Evolution Psychiat.* 2:177-235, 1954.

Describes the method and reports illustrative cases.

d. the "shock" therapies

110. *Electroshock and Blood Pressure. (Electrochoc et tension artérielle.)* J. LABOU-CARIE AND J. BENAZET, Toulouse, France. *Ann. méd.-psychol.* 2:41-53, June 1953.

A study of the changes in blood pressure during electroshock therapy was made

in 64 cases, including patients with normal blood pressure, those with occasional hypertension, those with true hypertension, and those with hypotension. It was found, in agreement with others, that the usual type of convulsant electroshock caused a rise in blood pressure in patients with normal blood pressure which was of relatively slight degree and short duration.

In patients with occasional hypertension there was a rise in blood pressure just prior to electroshock (due to emotional stress), though the immediate effect of the electroshock was to reduce the blood pressure. The blood pressure did not rise to the pretreatment level after therapy. In patients with true hypertension, there was a definite rise in blood pressure after electroshock, more marked and of longer duration than in persons with normal blood pressure. After 10 to 15 minutes, however, the blood pressure returned to the pretreatment level, and in some cases fell slightly below that level.

In patients with hypotension there was usually a moderate rise in blood pressure after electroshock. When complete loss of consciousness was induced by electroshock, the variations in blood pressure were very similar to those with convulsive electroshock, although in some cases the sudden rise in blood pressure might be somewhat greater and in other cases less. Especially in those cases where loss of consciousness was accompanied by prolonged apnea. In instances where convulsive electroshock therapy was given with barbiturate narcosis, the rise in blood pressure following the electroshock was much diminished or entirely absent both in patients with normal blood pressure and in those with hypertension. In patients with hypotension, this effect was less marked. In the controlled method of electroshock therapy under barbiturate narcosis in which the intensity of the electric current is raised progressively to 200 to 230 ma., the rise in blood pressure was more marked than following the usual form of electroshock without narcosis.

From these findings it is concluded that the use of barbiturate narcosis makes it possible to employ the usual type of convulsive electroshock therapy in patients with hypertension for whom such treatment is indicated. Controlled electroshock therapy, while it may be of value in preventing fracture complications, is not of value in preventing cardiovascular complications and is to be regarded as dangerous for patients with hypertension.

111. *Uses of Insulin in the Treatment of Psychoneurosis.* D. GHERARDOCCI, Pisa, Italy. Riv. di pat. nerv. 1:245-246, 1953.

Insulin, administered in small doses, is efficacious in the treatment of depressive psychoneurosis, hysteria, and neurasthenia. It is scarcely effective in the treatment of cenestopathy, psychoneurosis with psychoasthenic tendencies, anxiety, and periodic obsession. Insulin has no favorable effect on constitutional psychoasthenia characterized by folly. In the treatment of constitutional psychoasthenia, noticeable improvement was recorded when a medium dose of insulin was administered.

The sub-shock (medium dosage) provokes an increase in will tonus and normalizes the correlation between the diseased and the external world.

The treatment was completely successful in one case of periodic obsession, while in another aggravated by reactive depression, it caused only a partial improvement. Complete recovery resulted only after the patient was submitted to electroshock therapy. Cenesthopathy and psychoneurosis with psychoasthenic tendency were also noticeably improved with a medium dose of insulin. In cases of periodic obsession and of obsession with endogenous or exogenous reactive depression, only the electroshock therapy has given favorable results.

112. *Combined Coramine-Glissando Electroconvulsive Therapy in Severe Psychotic Excitement.* RUDOLF LEISER AND S. M. IZNER, Detroit, Mich. J. Nerv. & Ment. Dis. 117:353, April 1953.

The authors report on 14 patients treated with intravenous coramine prior to electroconvulsive treatment. Eight patients are reported to be out of the hospital, and 2 more to have shown temporary improvement.

The advantages of the treatment are as follows:

The patient may sleep following the convulsive treatment, which is an important therapeutic factor. The sleep may last from 20 minutes to one hour.

There are no respiratory complications. Patients do not become cyanotic during treatment and breathe normally much sooner after treatment.

Generally fewer treatments are required even in the most excited cases in order to obtain a good response. A good response is commonly noted in two or three treatments, patients rarely requiring more than eight to 10 treatments in a given series, in contrast to 15 to 30 treatments which may often be required in the uncombined type of electroshock treatment.

We have not yet seen the development of the transient organic psychotic pattern often seen in patients receiving an excessive number of electroconvulsive treatments.

The disadvantages are minor. 2 references.

neurology

CLINICAL NEUROLOGY

113. *Ménière's Disease; Successful Treatment by Chorda Tympanectomy.* SAMUEL ROSEN, New York, N. Y. Arch. Neurol. & Psychiat. 72:682-687, December 1954.

Section of the chorda tympani nerve in 97 consecutive cases of Ménière's disease was followed by complete relief from attacks of vertigo in 50 per cent and marked reduction in number and severity of attacks in another 28 per cent. In the remaining 22 per cent the Ménière's attacks were unchanged.

Fifteen per cent of the above patients had abnormal taste reactions on the anterior portion of the tongue before section of the chorda tympani. In two patients severe Ménière's disease occurred on the side of an apparently dead labyrinth. In both the attacks ceased after chorda tympanectomy. This procedure preserves the hearing, an important consideration since, in 12 per cent of all cases of Ménière's disease, both sides are involved.

Since stimulation of the chorda tympani nerve produces the sensory phenomenon of vertigo, tinnitus, and pain, this nerve contains afferent fibers others than those for taste. The clinical results in Ménière's disease following section of the chorda tympani may be explained by assuming functional interconnection between the central nucleus of the chorda afferents (presumably the nucleus of the seventh nerve) and the vestibular nucleus. Abnormal activity introduced into the former by afferents from the chorda tympani is thereby assumed to initiate the abnormal activity of the vestibular nucleus which leads to vertigo. The elimination of the chorda afferents by section abolishes the vertigo in many cases. Testing of this hypothesis, which is thus far based solely on clinical data, must await neurophysiologic and anatomic studies. Since this pathway bypasses the internal ear, section of the chorda tympani could explain the abolition of the vertigo and severe tinnitus in the two cases with an already dead labyrinth.

To accept the internal ear as the sole structure responsible for Ménière's disease leads inevitably to the destruction of the vital cochlea and static labyrinth, a deprivation which can probably be avoided in a large percentage of cases by section of the chorda tympani. To destroy the labyrinth or perform section of the eighth nerve before trying the simple section of the chorda tympani nerve would seem to reverse scientific order.

Section of the chorda is a simple operation requiring one day's stay in the hospital. It should be done whenever labyrinth destruction or section of the auditory nerve is contemplated, in bilateral cases and in cases in which the vertigo is not yet quite disabling enough for radical surgery. 25 references. 1 figure. 7 tables.
—Author's abstract.

CEREBROSPINAL FLUID

114. *The Effect of Age on the Protein Concentration of Cerebrospinal Fluid of "Normal" Individuals and Patients with Poliomyelitis and Other Diseases.*

OTTO H. MULLER, ALEXANDER A. JAWORSKI, A. CLEMENT SILVERMAN, AND MARY JANE ELWOOD, Syracuse, N. Y. Am. J. M. Sc. 228:510-519, November 1954.

Protein analyses of cerebrospinal fluid were made on samples obtained from 296 "normals" which included 100 cases with respiratory infections, 121 pre-operative cases, and 75 "nonmeningeal" cases, and covered ages ranging up to 80 years. There was no significant difference between the three subgroups, and a definite but small increase in cerebrospinal fluid protein with age was established. This could be expressed by the following equation: Normal CSF protein = $23.8 + 0.39 \times \text{age} \pm 15.0$. (Protein concentration in mg. per 100 cc., age in years.)

In contrast to this, a marked increase in cerebrospinal fluid protein with age was noted in 299 cases of poliomyelitis ranging in ages up to 50 years. Again, no significant difference existed between the subgroups, composed of 150 cases of paralytic, 105 cases of nonparalytic, 25 cases of bulbar, and 19 cases of bulbospinal poliomyelitis. The data could be expressed by the following equation: Poliomyelitis CSF protein = $43.0 + 1.77 \times \text{age} \pm 33.7$. The significance of these findings is pointed out. 7 references. 8 figures. 3 tables.—*Author's abstract.*

CONVULSIVE DISORDERS

115. *Psychical Phenomena in Temporal Lobe Epilepsy and the Psychoses.* SHAFICA KARAGULLA, Montreal, Canada, and E. ELIZABETH ROBERTSON, Edinburgh, Scotland. Brit. M. J. 4916:748-752, March 26, 1955.

The psychic phenomena which form part of the seizure pattern in epilepsy represent a mental disorder in miniature, and therefore this study may aid in a clearer understanding of the more complex mental disturbance found in the psychoses. A new stimulus to this approach has come from the work of Penfield and his associates, who have reproduced such psychical concomitants of epilepsy by electrical stimulation of the temporal lobe cortex. From a series of 105 cases studied by one of the writers (S. K.) under the direction of Wilder Penfield in the Montreal Neurological Institute, a number of cases is selected which illustrate the following mental phenomena:

(1) The experiencing of "thoughts"—such thoughts being either indefinite or formulated. (2) The hearing of "voices" within the mind or body or from a point external to the self. (3) The seeing of persons, objects, or scenes, which, again, may be perceived within the mind or at some point external to the self.

It is suggested that these phenomena can most usefully be categorized as hallucinations. The current popular definition of a hallucination implies the location of the abnormal perception external to the self, but it is submitted that abnormal

internal perceptions can also be included within this designation. The authority of the older French writers can be evoked to support this inclusion, for the "psychical hallucinations" of Baillarger, the "psychomotor hallucinations" of Seglas, are terms used by those authors to denote the "voices" which psychotic patients may experience within the mind or body. It is admitted nevertheless that this term "hallucination" lacks precision and that a new nomenclature is needed to describe the many varieties of abnormal experience meanwhile sheltering uneasily under this designation.

Five cases of temporal lobe epilepsy are described in which epileptic discharge evoked respectively (a) ill-defined or "amorphous" thoughts, (b) formulated or "crystallized" thoughts, (c) a voice located in the head, (d) a voice located in the abdomen, and (e) a voice heard in the external environment. Cortical stimulation reproduced (a), (b), and (e). Similar gradations in this type of hallucinatory experience, elicited from interrogation of patients suffering from schizophrenia, are briefly tabulated. Schizophrenic patients may describe foreign ideas which come to them as "thoughts," or as internal verbal productions with either a kinesthetic or tonal quality, or as voices seeming to emanate from the external environment. The form or syntax of these experiences, to which the patient often indiscriminately applies the term "voices," is difficult to elicit. Sometimes they appear as brief phrases, commencing with pronouns of the second or third person—for example, "You are," "He or she is," "You did," "Do it." Striking analogues of these are found in cases (c) and (d) of the above-mentioned cases of temporal lobe epilepsy: Case (e), for instance, heard a voice in his head saying "You do this, you do that," "You did something wrong." "Things," the patient added, "that I did not do wrong." This case is of surpassing interest, since here we see evoked by epileptic discharge that specific quality in schizophrenic thinking to which later French writers have applied the term "bipolarity." The content of the hallucinations in schizophrenia tends to consist of ideas that are repugnant or terrifying to the patient, that are the polar opposite of what he himself would wish to think and do.

Four cases of visual hallucinations in temporal lobe epilepsy are described. In two of these the visual experience was apprehended within the mind of the patient, and in the third as super-imposed on the external environment. (This last was reproduced by cortical stimulation.) In a fourth case the patient experienced the transformation of all his thoughts into vivid external images—"What he thought, he saw." This bears a certain analogy to the phenomenon known as "echo de la pensée" found in schizophrenia.

Brief reference is made to visual hallucinations in schizophrenia. Generally accepted as being a less constant symptom than "auditory" hallucinations, they can on occasion assume predominance. All the visual phenomena described in temporal lobe epilepsy have been found in schizophrenia. There may occur in the latter disease many more varied and complex visual hallucinations. Bizarre hallucinations of parts of the human body are frequent. In temporal lobe epilepsy such hallucinations are an episodic occurrence, whereas in schizophrenia they are

a constantly recurring experience; but in both they are of brief duration—"they come and go in a flash"—and in both they may be "seen" in the mind or in the external environment.

The finding that spontaneous epileptic discharge and/or electrical stimulation of the temporal lobe cortex can evoke gradations in hallucinatory experience similar to those in schizophrenia, suggests that the latter disease may also be based on abnormal neuronal functioning. This does not infer, however, that the nature and site of such abnormal neuronal functioning is the same for schizophrenia as for temporal lobe epilepsy. 8 references.—*Author's abstract.*

DEGENERATIVE DISEASES OF THE NERVOUS SYSTEM

116. *Control of Two Simultaneous Voluntary Motor Acts in Normals and in Parkinsonism.* ROBERT S. SCHWAB, MORRIS E. CHAFETZ, AND SYLVIA WALKER, Boston, Mass. *Arch. Neurol. & Psychiat.* 72:591-598, November 1954.

In the course of observing a large number of parkinsonian patients, the authors noted that another motor impairment, besides tremor and rigidity, was present. This symptom complex is described as the inability to maintain two voluntary motor activities at the same time.

When the authors became aware of this impairment in the parkinsonian patient, they devised a quantitative test of this function. The test consisted of squeezing an ergographic bulb with the nondominant hand, while the dominant hand performed another motor act. The ergogram response was then compared with the control ergographic result which had been obtained as a single motor act.

Quantitative differences are discussed in parkinsonism as well as in normal controls. The relationship between this deficit and the parkinsonian patients' ability to perform practical concurrent movements is an important aspect in the adjustment to this illness. 5 references. 7 figures.—*Author's abstract.*

DISEASES AND INJURIES OF THE SPINAL CORD AND PERIPHERAL NERVES

117. *Paraplegia Resulting from Severe Kyphoscoliosis.* PAUL C. BUCY AND MUSA-MEDDIN GOKAY, Chicago, Ill. *J. A. M. A.* 157:1210-1212, April 2, 1955.

Kyphoscoliosis is a common deformity of the spine, but the deformity itself is seldom the cause of a neurologic disturbance. On occasion however, the kyphoscoliosis and the distortion of the dura mater accompanying it may compress the spinal cord so as to produce a paralysis below the level of the compression. This may happen years after the kyphoscoliosis first appeared.

An illustrative case is reported, in which the symptoms of paraplegia did not appear until the age of 58 years, although the scoliosis dated from early childhood. The paraplegia which developed as a late complication of kyphoscoliosis was successfully treated with laminectomy and incision of the dura mater. The con-

troversy about the management of similar cases is pointed out. The important part of the surgical procedure is the transverse incision of the dura mater, with release of the compression. 10 references. 1 figure.—*Author's abstract.*

ELECTROENCEPHALOGRAPHY

118. *Some Observations on the Electroencephalogram in Cerebral Tumours.* J. H. D. MILLAR, Belfast, Ireland. *J. Neurol. Neurosurg. & Psychiat.* 18:68-71, February 1955.

The literature on the mechanisms of the production of slow waves in the EEG in cases with raised intracranial pressure is briefly mentioned. The records of 170 verified intracranial tumors are reviewed. Results are similar to those in other centers. The importance of cerebral edema in supratentorial tumors and active hydrocephalus in infratentorial tumors causing slow activity in the EEG is stressed.

Infiltrating supratentorial tumors may cause little mechanical distortion of normal cells and the EEG may be normal. Actively expanding tumors cause marked slow activity.

The EEG in subdural lesions was of little lateralizing value in this series. 13 references. 2 figures. 1 table.—*Author's abstract.*

119. *Remarques sur les stimulations à contenu psychosensoriel en électro-encéphalographie. La réaction d'arrêt dans les encéphalopathies.* (Remarks on psychosensory stimulation in EEG. The blocking reaction in EEG.) F. MARTIN, J. BAUMANN, AND G. SEMADENI. *Monatsch. für Psych. Neurol. (Basel)* 127: 289. June 1954.

The authors have studied the nature of the diffuse reactions of the electroencephalogram by comparing curve series registered under psychosensory stimulation in normal subjects and in patients suffering from various types of brain disease. They discuss in detail the different aspects of the blocking reaction, which they show to be dependent on various exogenous and endogenous factors. The reaction is conditioned by cortical and subcortical influences. The authors regard the systematic study of the blocking reaction as a method of spectral decomposition of the pathologic electroencephalogram and suggest studying on this basis the relation between diffuse reactions to psychosensory stimulations and variations in the level of consciousness.—*Author's abstract.*

120. *Study of Correlations Between Electroencephalographic and Psychological Patterns in Emotionally Disturbed Children.* JOHN H. TATERKA AND JOSEPH KATZ, New York, N. Y. *Psychosom. Med.* 17:62-72, January-February 1955.

The present investigation was undertaken to examine the possible relationships of severe emotional and behavioral disorders in children with their EEG's, and to

determine whether certain variables of psychologic testing and a history of serious diseases or head injuries could be correlated with EEG findings. The subjects consisted of two groups: (1) the abnormal group of 195 children, consisting mostly of schizophrenics and children with primary behavior disorders, ages 5½ to 12½; and (2) the control group, consisting of 44 children matched for age and sex but with no demonstrable emotional disturbance. All these subjects were tested with the Rorschach test, Bender Gestalt test, and Figure Drawings; various intellectual functions were also tested. It was attempted to correlate deviations in these tests, especially in the perceptual and perceptual-motor spheres, with abnormal EEG findings.

The problems under investigation are based on the hypotheses (1) that the psychologic traits and behavioral patterns of children are fundamentally influenced by both their constitutional make-up and subsequent pathologic changes caused by head injury, brain disease, or unfavorable environment; (2) that any brain pathology resulting from these damaging factors will affect the total adjustment of the child in an adverse manner and that certain types of cerebral dysfunctions may be reflected in abnormal EEG patterns; and (3) that deviations of certain psychologic test results, especially in the perceptual and perceptual-motor spheres, may be correlated with abnormal EEG findings.

The asymmetries in the Human Figure Drawings reported in this study may be related to observations in a recent paper by O'Brien, who found bodily asymmetries and hemiatrophy in x-rays of the head in a significant number of 103 epileptics studied. In another recent investigation by S. and E. Glueck of 500 juvenile delinquents, ages 11 to 17, striking physical differences between the delinquents and the controls of the study were demonstrated, especially in the greater laterality of body build.

If we follow Schilder's interpretations and hypotheses, the highly abnormal social behavior of the hospitalized groups under study may in part be attributed to a confused body image with its faulty perception, motor action, discrimination, and equilibrium, as a result of defect or developmental retardation in the cerebral structures.

Under these handicaps the external stimuli from the environment are likely to be continually misinterpreted and distorted.

No direct causal relationship has been established by this study, nor have we been able to offer any explanation of why certain children in the experimental group could demonstrate flawless perceptual-motor abilities in spite of an abnormal EEG, with the reverse holding true for several other subjects. However, these cases were infrequent exceptions to the usually observed phenomena, where markedly abnormal psychological test performances appeared to correlate with abnormal EEG's. Another topic for future research would be the attempted correlation of the psychologic and electroencephalographic variables for a larger and more diverse group of normal controls than it was possible to explore in the present study.

The conclusions of the study are as follows:

1. The high percentage of abnormal EEG's in childhood schizophrenia (78.6 per

cent) suggests an organic basis or component in this particular condition. An EEG abnormality rate of 73.4 per cent in the group of primary behavior disorders is in agreement with the findings of previous similar studies, and also suggests the probability of a defect or developmental retardation in the cerebral structure.

2. There is no apparent relationship between abnormality of the EEG and specific types of behavioral patterns such as extreme passivity, aggressiveness, or hyperactivity. Early head trauma and serious illness were found with the same incidence among children of the emotionally disturbed group with normal EEG's as among the abnormal. Neither is there any apparent relationship between the EEG and specific emotional traits as suggested in the Rorschach test, with the possible exceptions of the apperceptive approach and form quality.

3. The greater the cerebral dysfunction, as indicated by the EEG, the more abnormal do we find specific psychologic variables dealing with perception, perceptual-motor functions, and the body image.

4. Gross distortions in visual motor Gestalt functions, in body image, and in perceptual and motor functions in general appear related to foci and asymmetries in the EEG, most notably in the occipital areas.

5. The alpha percentage may be related to the accuracy of form perception as reflected by the Rorschach test. This accuracy of perceptual association appears to become impaired in the presence of foci in the EEG, especially occipital foci.

6. The results of the study tend to support Schilder's contention that organic damage to the brain causes a disturbance in perception and motility and therefore adversely affects the body image. 46 references. 9 tables.—*Author's abstract.*

INFECTIOUS AND TOXIC DISEASES OF THE NERVOUS SYSTEM

121. *Psychopathology of Brain Damage in Childhood.* (*Psychopathologie der kindlichen Hirnschädigung*). GERHARD BOSCH. Fortschr. d. Neurol., Psychiat. 22:425, October 1954.

The author reviews the English, French, and German literature on the psychopathologic consequences of prenatal, natal, and postnatal damage to the brain.

The experiences with epidemic encephalitis 30 years ago have shown that diseases of the brain in children may have other psychopathologic manifestations than those observed in adults. The residual disturbances may be of extraordinary importance for the development of the child and for his adjustment to the environment.

Various workers emphasize that it is important from a practical as well as theoretic point of view to consider the brain-damaged children as a distinct group in comparison with other groups of difficult to train children, neuropaths, psychopaths, and feeble-minded children. The concept "brain-damaged child" does not indicate the extent or type of damage nor the intensity of the subsequent disturbance. The resultant difficulties may be very severe or indeed very mild and transient but they should be studied in their relationship to brain damage. The

present review of the literature furnishes no definite results, but rather experiments and suggestions for further elaboration and investigation.

Attention is called to the large volume of work done in the United States which has developed in connection with the work of Goldstein and the school of gestalt psychology. The author refers particularly to the detailed analyses of sensorimotor disturbances, of disorders of the thought processes, and abnormal attitudes (figure background relationship, concrete-abstract attitude, perseveration, etc.). Various tests related to this work and utilized in the search for specific disturbances are discussed. The author concludes that the results of the investigations are promising and that they come close to practical experiences.

The publications reviewed under the "Genetic Aspect" emphasize the importance of the "time factor." Brain damage occurring at an early stage of brain development has different consequences than brain damage occurring at later stages. The influence on the life situation, brought about by the mental handicap, is considered in its different phases. Various psychopathologic manifestations as, for instance, the frequently observed aggressiveness of the brain-damaged child is considered by many authors as secondary to emotional deprivation.

Under "Characterologic Aspect," the author discusses the views of v. Baeyer and others mainly from "German speaking regions," who, in their work, try to bring out fundamental character changes on "organic" bases. Brain anlage and location of the lesion is considered as determining psychic changes and personality differences.

A chapter is also devoted to experiences with the usual test methods. The conclusion is reached that they are only of limited usefulness for the examination of the brain-damaged child.

A survey of clinical publications is presented in several chapters. It shows, on one hand, the multiplicity of possible damaging factors in the prenatal, natal, and postnatal periods. It shows, on the other hand, how difficult it is to determine with any degree of accuracy the resultant psychopathologic consequences in their relationship to brain damage.

The author concludes that the premorbid personality, the milieu, and the time factors are more important for the formation of the final psychic picture than cause and site of the damage.

The review of the literature on therapy leads to the awareness that brain-damaged children are in need of greater protection. One has to consider their marked difficulty in adaptation and their specific performance defects. It is necessary to modify their environment and to provide specialized instruction. It is important to utilize compensatory possibilities early.

NEUROPATHOLOGY

For Reference

122. *The Role of Neuropathology in Modern Anthropology.* CLEMENS E. BENDA, Waverly, Mass. *J. Neuropathol. & Exp. Neurology.* 14:1-10, January 1955.

TREATMENT

123. *Tension Headaches and Their Treatment.* MILTON H. KIBBE, Springfield, Mass. Dis. Nerv. System. 16:77-80, March 1955.

Tension headaches, the most common type of head discomfort, differ from migraine in several respects: (1) There are no prodromal symptoms such as visual scotomas or nausea. (2) The pain is usually described as vague, dull, and bilateral, or as sensation of pressure with accompanying muscular tension and spasms in the neck or scalp muscles. (3) Tension headaches frequently follow or occur simultaneously with periods of emotional distress.

Fiorinal is a tablet compounded of 50 mg. of Sandoptal (isobutylallylbarbituric acid), 200 mg. of acetylsalicylic acid, 130 mg. of acetophenetidin, and 40 mg. of caffeine. Fifty patients presenting complaints typical of tension headache, including some with post-traumatic syndromes, were given an average dose of 1 Fiorinal tablet every 4 hours beginning at the onset of a headache. Most patients were instructed not to exceed 4 to 6 tablets a day and to avoid taking any strong sedative preparations. A special headache chart with detailed data on family history, symptoms and course of headache, x-ray, neurologic and EEG studies, previous treatment, diagnosis, treatment, and results was prepared for each patient. Average length of follow-up was about 8 months, with office visits every 3 weeks.

Analysis of data from the headache charts revealed that a family history of headaches or migraine was present in about 22 per cent of the cases. Definite emotional factors were present in over 90 per cent of the patients and physical fatigue was an important concomitant symptom. Excessive use of alcohol or tobacco appeared to be a contributing cause in about 50 per cent of the cases. The two most common locations of head pain were the frontal and occipital areas, with accompanying muscular tension of the neck. Patients usually described the pain as dull; it eased as time elapsed and was definitely relieved by rest or sleep. Neurologic examinations were negative for all except two patients who had previously had severe head injuries. EEG's were done in 27 cases; 13 were abnormal, but the abnormality was attributed to earlier head injury or to a post-traumatic epileptic state. Of the 50 patients, 24 (48 per cent) obtained good relief, 40 per cent fair relief, and 12 per cent no relief. When easing of the headache occurred it was accomplished by 1 or 2 tablets without unpleasant side effects. The author concludes that in the relief of tension headaches Fiorinal seems to be one of the most useful preparations available. 7 references.—*Author's abstract.*

124. *Parsidol in the Treatment of Parkinsonism.* DEWEY K. ZIEGLER AND FERNANDO TORRES, New York, N. Y. Neurology. 5:197-200, March 1955.

A comparatively new synthetic drug (diethylamino-2-propyl-1 N-phenoxythiazine) with the trade name of Parsidol, with pharmacologic effects which include ganglionic blockage, anticonvulsant activity, antihistaminic activity, and antispasmodic

activity in experimental animals, proved to have some effectiveness against symptoms of Parkinson's disease. Thirteen of 30 patients showed some degree of subjective and objective diminution of tremor or rigidity, or both, on doses of the drug, added to their previous drug regimen in doses up to 400 mg. per day. Side effects included dizziness and restlessness. 6 references.—*Author's abstract.*

125. *Desoxyn Therapy for Nocturnal Seizures; A Preliminary Report.* JOHN LOGOTHETIS, Minneapolis, Minn. Neurology. 5:236-241, April 1955.

Desoxyn (methamphetamine sulfate) was added to the previous anticonvulsive medication of 20 patients with nocturnal and 26 patients with daytime seizures. Sixty-five per cent of the nocturnal cases showed a 50 per cent decrease in the frequency of attacks. The daytime cases showed either no change or a tendency to increase the number of spells. It is suggested that nocturnal seizures may arise from diencephalic epileptic foci and that Desoxyn is effective through its cortical stimulating action, producing an inhibition of abnormal diencephalic discharges. The aggravation of daytime seizures could be explained on the basis of stimulatory action of cortical epileptic foci. 24 references. 1 table.—*Author's abstract.*

126. *Treatment of Herpes Zoster With Gamma Globulin.* I. IRVING WEINTRAUB, Gainesville, Fla. J. A. M. A. 157:1611, April 30, 1955.

Gamma globulin was used in the treatment of 6 patients with herpes zoster. There was a dramatic relief of pain within the first 24 hours in 4 of the 6 patients. There was no further progression of the skin lesions in any of the patients after the first injection and there was no evidence of any secondary infection. The one case of 7 days' duration prior to the first treatment showed relief of pain within 48 hours. The lesions that were just beginning to form at the time of the gamma globulin injection disappeared completely without scarring. Those lesions that were already hemorrhagic at the time of injection receded rapidly, without any gangrene or ulcer formation. The inflamed, reddened halo on the vesicles disappeared after the first injection in all cases. Complete healing of the skin lesions progressed in the usual manner and required one to three weeks. The one patient with postherpetic neuralgia showed no improvement whatsoever. Gamma globulin had no effect in the chronic long-standing case of postherpetic neuralgia, while on the other hand, apparently the earlier it is used in the disease, the better are the results. 1 reference. 1 table.—*Author's abstract.*

BOOK REVIEWS

Angiographic Localization of Intracranial Masses. P. A. ECKERS AND A. RIEMENSCHNIDER, Charles C Thomas, Springfield, Ill., 1955. Pp. 431 + xiv. \$13.50.

This volume is a very welcome addition to the roentgenologist's working reference library, especially if, like many roentgenologists, his examinations for intracranial masses are a relatively small proportion of his work.

The book is in the nature of an atlas, but one with unusually prolific descriptive matter and histories of proved cases illustrating practically all the conditions shown in the film reproductions.

The authors and printers are to be congratulated on the excellent quality of the film reproductions, which adds immeasurably to the value of the work. Poor reproductions have often damned an otherwise excellent volume in the radiologic field.

In the use of this book it is to be remembered that the anatomic locations of blood vessels vary greatly in the normal, and what may appear to be a pathologic displacement is merely an anomaly. The authors are quite in agreement with this viewpoint and state in the opening paragraph of the Foreword that "In the future, our present interpretations may be shown to be erroneous."

However, in the progress of the development of this phase of diagnostic roentgenology this atlas should prove to be a great help to those engaged in the work. It is quite possible that an accurate diagnostic procedure in this field of roentgenologic specialization will eventually evolve.—*W. W. Eldridge, M.D.*

Educating the Sub-normal Child. FRANCES LLOYD. New York, Philosophical Library, 1953. Pp. 148. Price \$3.75.

Misconceptions of purpose and the inhibiting influences of stigma have too frequently impeded the progress of significant educational practice. This has applied especially to the care of children with low intelligence (I. Q.'s between 50 and 75), an area about which there has been wide disagreement and, until recent years, unshakable pessimism. In light of this background it is instructive to become familiar with the work of Miss Frances Lloyd with educationally subnormal children in England. Operating in a thoroughly optimistic setting, she makes a distinct contribution by demonstrating how a program can function successfully in meeting the unique needs of this special group, even in an ordinary school atmosphere with the usual limitations of staff and facilities.

The author states that "the mentally handicapped child has an equality with the average or bright child, in that he is to develop to the fullness of his capacity," and become a happy and well-adjusted member of the community. She proceeds to show how this can be accomplished most efficiently within the setting of the special school, and that special methods of instruction alone are not sufficient to insure success. More basic are the nature of the school atmosphere and teacher attitudes, which must be adjusted to the needs of the children. She refers to the additional advantages of small classes and individualized care within a homogeneous group.

In presenting a detailed description of the various phases of the curriculum, she is able to empirically support her thesis that the mentally handicapped child is educable. This is related systematically to the specific aims of the special school and takes into consideration cultural factors and parent attitudes. Selected case studies are presented to document the experimental methods used and, al-

though abbreviated, they afford at least a general picture of the manner in which the children are studied and treated. Pictorial representations of the free expressive work in clay are included.

While she discusses how the subnormal child who is also emotionally disturbed can be helped through creative expression, Miss Lloyd strongly urges that those with behavior disorders should not be permitted to attend the special school, but referred for appropriate treatment.

The emphasis throughout the special training is upon the functional rather than the mechanical value of subjects taught. In the "junior school" the attention is necessarily more individualized while the child is being prepared for the "secondary school" (age 11), where project work makes use of social skills and opportunities to develop initiative and leadership. The activities available include the three R's, social training, speech, acting, music, art, free play with a chance to do creative work, and organized, guided lessons. The ineffectiveness of random, unsupervised activity only has been long demonstrated. The practical aspects of adjustment are stressed throughout to encourage the development of suitable hobbies and skills related to subsequent occupational placement. Awareness is also taken of the relationship of the curriculum to the development of secure, stable personalities, recognizing the need for freedom of expression as well as support and control.

Miss Lloyd touches only briefly upon the use of small group meetings with individual parents to help them understand their children's needs, their mutual problems as parents of these children, and how they might better cooperate with the school to facilitate progress in training. This appears to be of much promise, and is reminiscent of the impressive pioneer work with parent groups by Lloyd N. Yepen and his associates in New Jersey.

The book offers further evidence as to how constructive training can enhance the lives of the many children of subnormal intellect. With other recent demonstrations of success in increasing learning through specialized academic activities and both individual and group therapy, the outlook is more hopeful for developing a systematic orientation with improved techniques to meet the varied needs of this group. Almost entirely neglected in the past, the subnormal child is now obtaining the careful attention that he needs. Miss Lloyd's reported experiences should aid in stimulating others to make further progress along similar lines.—*Norman Kaplan, Ph.D.*

Ocular Manifestations in Diseases of the Nervous System (Augensymptome bei Nervenkrankheiten). WERNER KYRIELEIS, Walter de Gruyter & Company, Berlin, Pp. 153, 35 illustrations. Price M 32.

The author provides a relatively short text on the borderland of ophthalmology and neurology. He emphasizes the numerous relationships between the two fields. This is particularly exemplified in the study of the visual fields and of papilledema for the evaluation of certain disease processes. The book is an aid in diagnosis only. Treatment is, in general, not considered.

The text is divided into two approximately equal parts:

A. "Eye Symptoms in Diseases of the Nervous System." This part contains six chapters: 1) Diseases of the optic nerve (neuritides); 2) Diseases of the optic nerve (atrophies); 3) Visual tracts and visual centers; 4) Pupils, Accommodation; 5) Eye movements; 6) Facial trigeminal and sympathetic nerves.

B. "Diseases of the Nervous System with Eye Symptoms." This part is composed of eight chapters: 1) Syphilis of the central nervous system; 2) Diseases predominantly of the white substance; 3) Diseases of the grey matter; 4) Brain injuries, abscesses, meningitis; 5) Brain tumors; 6) Circulatory disorders; 7) Degenerative and hereditary diseases; 8) Functional visual disorders.

Because of this somewhat unusual arrangement some problems are rather advantageously illuminated from different angles. The chapters are brief, yet they contain sufficient material and they are presented in such manner that they can be read with sustained interest. There are enough well selected illustrations to facilitate the understanding of the subject.

The last chapter deals with functional visual disorders. Various tests are described that should be helpful in establishing such diagnosis. In this chapter, the author discusses some therapeutic possibilities. He points out that the selection of suitable tests may directly lead to elimination of symptoms and therapeutic results in many cases. The author is mindful of the fact that a certain number of cases will remain that will require lengthy and specialized psychotherapy. This chapter expresses the author's orientation in this field. He avoids the word hysterical because it often calls forth derogatory value judgment. He provides some understanding of the psychogenic and functional disorders by discussion and appropriate examples.

The book disregards the less important symptoms, yet supplies enough detail in the more frequently occurring neuro-ophthalmologic syndromes to prove useful to physician and student. It may also serve as a quick, first reference book on the desk of the busy specialist in these fields.—*E. H. Friedman, M.D.*

NOTES AND ANNOUNCEMENTS

The Inter-American Society of Psychology invites its members to attend The Third Inter-American Congress of Psychology at the University of Texas on December 16-21, 1955. Psychology of Social Tensions, the central theme of this Congress, will be approached from the points of view of applied psychology, mental health, social anthropology and teaching. There will be four major symposia plus conferences, showings and discussions of films, and guided tours.

► For information regarding membership in the Inter-American Society of Psychology, contact Werner Wolff (Secretary General), Bard College, Annandale-on-Hudson, New York.

To apply for participation in the December Congress send five copies of an abstract of approximately 250 words to the Program Committee, c/o Werner Wolff at the above address.

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